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Vol. XXX.

THE
JOURNAL
OF THE
Royal Horticultural Society

EDITED BY

G. S. SAUNDERS, F.L.S., F.E.S.

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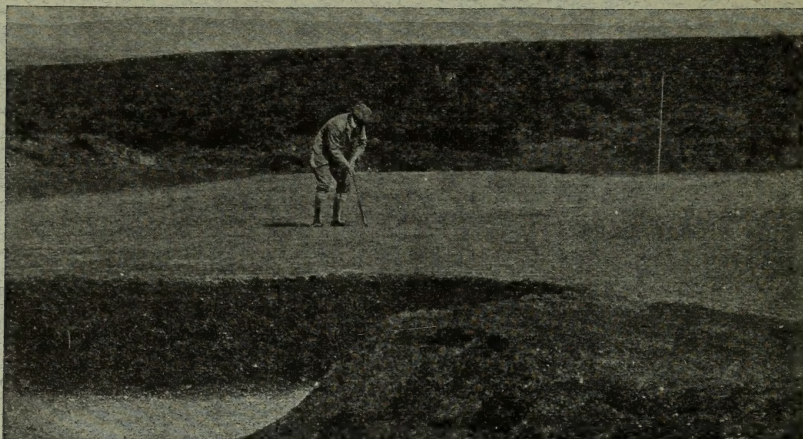
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JOURNAL
OF THE
ROYAL HORTICULTURAL SOCIETY
VOL. XXX.

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OF THE
ROYAL HORTICULTURAL SOCIETY

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A.D. 1809, 1860, 1899

EDITED BY
GEO. S. SAUNDERS, F.L.S., F.E.S.

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LONDON
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PREFACE

THIS volume contains a report of the Fruit Conference held on October 10, 11, and 12, 1905, under the joint auspices of the Royal Horticultural Society and the National Fruit Growers' Federation. The Society invited the National Fruit Growers' Federation to unite with them in a joint Conference. This suggestion they very cordially accepted, and to their hearty co-operation the success of the Conference was largely due. The Conference extended over three days. It was opened by Sir Trevor Lawrence, Bart., K.C.V.O., who took the Chair at the first meeting.

The Society held their first Fruit Conference in October 1883, at their Gardens at Chiswick, when Apples were the only fruit under consideration. A Pear Conference was subsequently held in 1885. As the importance of fruit cultivation was rapidly being recognised by the public, the Society held another Conference, on Apples and Pears, in October 1888, in the large Vinery at Chiswick, in order to bring together all the available information as to the best varieties of those fruits and the best means of cultivating them. The result of this Conference is embodied in a report which with "certain statistics obtained at the Society's Apple Congress, held at Chiswick in 1883," forms the tenth volume of the Journal of this Society. In that report will be found a descriptive catalogue of the Apples exhibited at the Conference in 1883 and at that in 1888. In this present volume is given a list of the various fruits certificated by the Society, compiled by Mr. S. T. Wright, the Superintendent of the Society's Gardens at Wisley. This will complete the list of the most notable Apples in cultivation in this country up to the present time.

The Fruit Conference last year was held in the Society's House in Vincent Square, and their Annual Show of British-grown

Fruit was held on the same days in the Large Hall. Both the Conference and the Show were very well attended. The papers read at the former were by experts in the subjects they dealt with, and were of exceptional value and interest.

To this report there have also been added a table and map showing the acreage under cultivation, either as orchards or for growing small fruits, in each county in England and Wales ;

A list of varieties of different kinds of fruit recommended by the Royal Horticultural Society, with some information as to their culture, revised in 1906 ; *

A few remarks on the Exhibition of British-grown Fruit held on October 10, 11, and 12, 1905, with a schedule of the various classes, with the names of the exhibitors who gained prizes ;

Two papers on the Cultivation of Fruit, and the increase of that industry in the United States of America ;

And a paper on the "Crystallisation of Fruits and Flowers," being germane to the subject of the culture of fruit in this country.

The Report of the Committee on the Fruit Industry of Great Britain, mentioned by Sir Trevor Lawrence and other speakers, is given in full in the last volume (vol. xxix.) of the JOURNAL OF THE ROYAL HORTICULTURAL SOCIETY.

* This list is also published as a pamphlet.

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JOURNAL

OF THE

ROYAL HORTICULTURAL SOCIETY.

VOL. XXX. 1906.

CONFERENCE ON FRUIT GROWING.

PROGRAMME.

Tuesday, October 10—2.30 P.M. to 5 P.M.

Chairman—Sir TREVOR LAWRENCE, Bart., K.C.V.O., V.M.H.,
President of the Royal Horticultural Society.

Subject—"FOREIGN COMPETITION AND HOW TO MEET IT."

(A) *Best Varieties to Grow.*

Mr. GEO. BUNYARD, V.M.H.

Mr. JOS. CHEAL, F.R.H.S.

(B) *Grading, Packing, &c.*

Mr. JAMES HARPER (Dublin).

Mr. HERBERT PANTIN.

Dr. GOETHE (Darmstadt).

Wednesday, October 11—11 A.M. to 1.30 P.M.

Chairman—F. S. W. CORNWALLIS, Esq., President of the Royal
Agricultural Society of England.

Subject—"FUNGOID AND INSECT PESTS AND HOW TO MEET THEM."

F. V. THEOBALD, M.A. (South-Eastern Agricultural College,
Wye).

Mr. F. SMITH (Loddington, Maidstone).

Mr. GEO. MASSEE, F.L.S., V.M.H. (Kew).

Mr. CECIL WARBURTON, M.A., Zoologist to the Royal Agri-
cultural Society of England.

2.30 P.M. to 5 P.M.

Chairman—ARTHUR S. T. GRIFFITH-BOSCAWEN, Esq., M.P.

Subject—"LAND TENURE AND RATING DIFFICULTIES."

Mr. CECIL HOOPER, F.S.I.

Mr. S. H. COWPER COLES, F.S.I., Nominee of the Wisbech
Fruit Growers' Association.

Thursday, October 12—11 A.M. to 1.30 P.M.

Chairman—Sir ALBERT ROLLIT, M.P.

Subject—"RAILWAY GRIEVANCES."

Mr. W. W. BERRY (Faversham).

Mr. JOHN IDIENS (Evesham).

Mr. GEO. MONRO, President of the National Federation of Trades Association.

Mr. T. F. GODDARD.

2.30 P.M. to 5 P.M.

Chairman—Colonel LONG, M.P., President of the National Fruit Growers' Federation.

Subject—"DISTRIBUTION OF INFORMATION IN CONNECTION WITH THE PROPOSED ESTABLISHMENT OF AN EXPERIMENTAL FRUIT FARM BY THE BOARD OF AGRICULTURE, AND ITS POSSIBLE EXTENSION FOR DEMONSTRATION OF COMMERCIAL FRUIT GROWING."

Mr. SPENCER PICKERING, F.R.S., Director of the Woburn Experimental Fruit Farm.

Mr. W. A. MACKINNON, late of the Canadian Government Fruit Division.

Mr. H. F. GETTING (Ross).

FIRST DAY, OCTOBER 10, 1905.

Subject—

"FOREIGN COMPETITION AND HOW TO MEET IT."

Chairman—Sir TREVOR LAWRENCE, Bart., K.C.V.O., V.M.H.,
President of the Royal Horticultural Society.

SIR TREVOR LAWRENCE, in giving the opening address, said: I think we should at once begin our proceedings because there are important papers to be read, and we anticipate some interesting discussions on them. I shall not, therefore, detain you at any length with my remarks. Discussions on all matters connected with health have been going on so long, and have so completely covered the whole question of food and food supply, that it has become recognised on all hands that the provision of a good fruit supply is one of the most important requirements of a good dietary. It has been contended by physicians of eminence who are fully acquainted with the subject that in this country we are too much given to animal, and too little to vegetable food. I am not quite sure that this is not due—at all events to some extent—to our defective education in the way of treating vegetables and fruit for the table. But it has probably fallen to the experience of most of us that in recent years these, from a dietary point of view, have come to be considered of great value.

You will see by the agenda that the first question to be discussed is the subject of foreign competition and how to meet it, and with a view to showing how important that competition is, I have taken out some figures representing the value of fruit which we import, but which might be grown in this country. In 1904 the value of Apples—raw—was £2,118,000, Cherries £319,000, Currants £143,000, Grapes £837,000, Pears

£503,000, Plums £526,000, and miscellaneous—Strawberries, Peaches, Apricots—£102,000, making a total value of fruit which could certainly be grown in this country £4,548,000. Then, in addition to the fruit which could be grown in this country, there is an important element which is not really competitive because the fruit could not be grown in this country. But the total of all sorts imported during 1904 into this country represents a value of £10,237,000, four-and-a-half millions of which at least could have been grown in this country. Of course we cannot grow Bananas, representing £1,382,000, nor can we grow Oranges—£2,193,000. With regard to Bananas, I do not know whether any of you have a personal acquaintance with Sir Alfred Jones. He is a most energetic person, and I happen to have heard what took place on the question of the importation of Bananas. Travelling on one of his company's steamships—the Elder-Dempster Line—he landed at the Canaries. He looked round and saw it was a place where Bananas could be grown. He took a lease of a large area and planted Bananas. When the time came he told people in Liverpool he wanted them to sell the Bananas at a penny apiece. They said they could not possibly do so, as they could get 2*d.* or 3*d.* apiece for them. At the proper time he sent for forty or fifty costermongers who sold at a penny apiece and obviously put those who wanted 2*d.* apiece out of the market. Then the Liverpool people said that the costermongers obstructed the traffic, but Sir Alfred Jones sent for a learned K.C. who established the right of the costermongers to sell. I mention this only to show what energy will do, and now the trade in Bananas is well established. In this country we have our troubles, due to climatic influences, to contend with. Last year in the greater part of the South-East of England we had a fair supply of Apples and Pears, but this year we have but few, so that the exhibition downstairs to-day is specially creditable and interesting—one equally interesting to growers and consumers; and I think I may say that on the whole the exhibition, whether we refer to amateurs or to those who make the growing of fruit more or less a business concern, is eminently satisfactory, especially considering the season.

When I was a boy you could not buy a pound of Muscat Grapes under 12*s.* or 15*s.* or even more. Now we can get the most excellent Muscats at 2*s.* 6*d.* a pound. That merely shows you what can be done by hot-houses in this country, and I only refer to the matter to emphasise the importance of fruit as a food supply. You can see in the Hall below what a valuable adjunct fruit is to our national reserve of food, and it has really come to this, that the fruit-growing interests of this country form a very important national industry, and I think the more we can do to further these home industries, the better we shall be doing our duty to our country.

I should just like to refer for a moment to the report of the Committee on the Fruit Industry of Great Britain. It is an alarming-looking document, but it costs only 4½*d.*, and I venture to recommend it to the earnest perusal of all who are interested in the fruit industry; and as I was saying to our friend and Secretary, Mr. Wilks, if the recommendations contained in that report were carried out, we should find the fruit industry in this country placed upon a satisfactory basis all round.

I am sorry to say that the recommendations are forty in number, and, knowing what usually happens to recommendations of Committees, they are not very likely to be all adopted, but still there is a large number which fairly claim thoughtful consideration. I thank you very much for listening to the few remarks I have had to make, and I now call upon Mr. Bunyard to read his paper.

FOREIGN COMPETITION AND HOW TO MEET IT.

(A) THE BEST VARIETIES TO GROW.

MR. GEO. BUNYARD: I wish to say a few words at this Conference, and my remarks may be looked upon as merely opening the discussion instead of being a paper at any length. Mr. Cheal will deal with the subject from one point of view, and it is our desire that there should be every possible discussion. I would say at the outset that we must, of course, look upon the altered conditions governing trade, and especially the fruit trade, at the present time in this country. Very many of you will recollect that when foreign fruit came into this country years ago it was carried in sailing vessels. The introduction of steam has entirely altered the methods of importation, and the British fruit-growers have now the foreigner to take into account. Steam power has made such a revolution in a short time, that we now find in our markets fruit from the Canaries, South Africa, California, &c. This must occupy the serious attention of those who believe that fruit can be grown in this country, when to such a large extent the home-grown fruit has been displaced by its foreign rivals. I might mention the enormous development in the Banana and Orange trade. It was at one time very unusual to see many Oranges till just before Christmas, and Bananas were never seen. I mention these things because they must to some extent take the place of the fruit which is produced in this country. We have to take that into consideration, especially when we are reviewing the soft-fruit trade, because we find our markets are made use of for the importation of a large quantity of pulp, free. On the Continent the small growers combine and take every advantage of co-operation, sending their goods to a central depôt, and thus placing themselves on equal terms with the big men.

Then comes the question, how are we to meet the foreigner? We must exercise business qualities as we should in any other business. We must meet this competition by organisation. We have Chambers of Commerce in various parts of the country, and they could do a great deal more in conjunction with the Fruit Growers' Federation, and other Societies which will be represented here during the present week. My own opinion is, looking back over fifty years of active business as a grower, that we shall stand very little chance unless some organisation is brought into play. From my experience the small grower is handicapped by having to provide far too many kinds of some fruits. Two or three thousand bushels of one or two varieties would be preferable, and the small grower should cater for the local and retail trade, rather than flood the market and not get an adequate return. Of course there is not so much difficulty as there used to be in that particular department, because the principal railway companies are now

quite ready to find boxes for the conveyance of such fruit; but people must take the trouble to make their business known by circulars and otherwise.

As to packing, we have been hammering at that subject for a long time past. There seems to be a disposition on the part of buyers rather to favour the old-fashioned baskets. I wish we could introduce the non-returnable boxes. They could be made at a reasonable price. I believe some market people are already laying plans for supplying such boxes at a price which will not necessitate their return. I mention this because, and especially among the small growers, there is great difficulty in getting empties back, and much inconvenience is caused by not having baskets in which to send ripe fruit away. Of course it may be said that a grower should have a proper supply of boxes to last all the season. If we used boxes they could be "roughed out" in suitable sizes, and they could be made up in the winter, when work is comparatively scarce. As regards the best dessert Apples and Pears, there is no doubt that if they were put up in boxes and very carefully packed they would make considerably longer prices than if put into baskets. In sending kitchen Apples to market it is better to use bushel than half-bushel baskets. The half-bushel has bottom, sides, and top, the same as the bushel, and consequently a larger percentage of Apples get injured in the smaller package.

I would also advise the cultivation of Pears on the Quince stock—where the soil is suitable—and Apples on the Paradise stock. They may be put in six feet apart, which would mean 1,200 to the acre, and good results would be obtained with proper care and attention. Growers should never feed the trees unless there is a crop. There is another point I must mention, because in the past a great many mistakes have been made in planting large blocks of trees of one variety together. Experience has shown that such trees cannot be properly cross-fertilised, because we find that we get a crop on the outsides and not in the middle of the plantation. I am glad Sir Trevor has alluded to the beneficial effect of fruit on the public health. I believe it is of the greatest importance not only as regards the general health of the community but also in the promotion of temperance.

Mr. Bunyard gave the following as the best varieties to grow:

Early dessert Apples to pick and consume from the tree: Mr. Gladstone, Quarrenden, Yellow Ingestrie, Ben's Red, Duchess's Favourite. To store for a short time: King of the Pippins, Worcester Pearmain, James Grieve. From October to Christmas: Cox's Orange Pippin, Allington Pippin, Christmas Pearmain. After Christmas: Cockle's Pippin, Baumann's Reinette, Gascoyne's Scarlet.

Culinary Apples to sell from the tree: White Transparent, Julien, Grenadier, Early Victoria, Potts's Seedling, Ecklinville. In September and October: Warner's King, Lord Derby, Tower of Glammis, Bismarck, Norfolk Beauty, Lane's Prince Albert. After Christmas: Blenheim Orange, Bramley's Seedling, Newton Wonder, Wellington (where soil suits), Northern Greening, Winter Quoining, Alfriston, Hambling's Seedling.

Pears (Standard): Hessel, Fertility, Crawford, Pitmaston Duchess, Williams's Bon Chrétien; and for growing on the Quince stock: Williams's Bon Chrétien, Dr. Jules Guyot, Conference, Louise Bonne, Doyenné du Comice, Beurré Hardy, Beurré Superfin, Van Geert.

Plums : Rivers' Prolific, Orleans, Belle de Louvain, Victoria, Pond's Seedling, Monarch, Denniston's Superb, Jefferson's King of Damascus, Worcester Damson.

Cherries : Early Rivers, Waterloo Heart, Black Eagle, Black Heart, Tartarian, The Noble, Baumann's May, Kentish Bigarreau, Bigarreau Napoléon, Kentish Red Cherry, Morello.

Gooseberries : Crown Bob, Whinham's Industry, Keepsake, White-smith, Lancer, High Sheriff.

Currants : Knight's Early or Scotch, New Red Dutch, Black, Boskoop Giant, Lee's Prolific, Naples, Baldwin's Black.

Raspberries : Superlative, Norwich, Hornet.

Strawberries : Sir J. Paxton, Royal Sovereign, Elton Pine, Eleanor.

Mr. J. CHEAL : What I have to say will be so elementary that it may appear to experienced fruit-growers almost childish ; yet one is constantly observing, even to this day, so many foolish mistakes being made that I am tempted to repeat some of the first principles of fruit culture.

To meet foreign competition we must *grow our trees well*, and not attempt to cultivate too many varieties. We must also exercise care and forethought in gathering, grading, packing, and marketing our crops.

In the first place, as to cultivation, we must select suitable positions, not too high or too low, bearing in mind shelter and drainage, as well as the character of the soil. The preparation of the soil is of the utmost importance. It must in the first place be thoroughly clean, deeply cultivated, and, if at all waterlogged, thoroughly drained with pipe drains ; also a moderate amount of manure should be applied at the time of planting.

As to the number of varieties, it is better to limit these than to attempt to grow too many. It is well, if possible, to have a continuous supply of one variety, provided it is good, and suits the consumer, as well as one that will thrive in the particular soil of the locality. In planting large breadths of one variety, however, it is better, assuming that bush trees are planted, to separate these with intermediate rows of half-standards. This is the most economical way as regards space, and it also assists in cross-fertilisation.

It is difficult to give a short list of varieties that will suit different districts and everybody's requirements, as there will necessarily be differences of opinion on this point. I think, however, that the following varieties have proved themselves good and reliable over a wide range of circumstances :

Dessert Apples, the eight best.—Beauty of Bath, Blenheim Orange, Claygate Pearmain, Cox's Orange Pippin, Duchess of Gloucester, King of the Pippins, Mannington Pearmain, Worcester Pearmain.

Cooking Apples, the twelve best.—Bismarck, Ecklinville, Lord Grosvenor, Bramley's Seedling, Golden Noble, Lord Derby, Newton Wonder, Potts's Seedling, Lane's Prince Albert, Jubilee, Stirling Castle, Warner's King.

Pears for Bush Trees on Quince, the ten best.—Doyenné Boussoch, Doyenné du Comice, Duchesse d'Angoulême, Pitmaston Duchess,

Durondeau, Beurré Hardy, Fertility, Williams's Bon Chrétien, Beurré Superfin, Marie Louise d'Uccle.

Plums, the eight best.—Cox's Emperor, Greengage, Jefferson's, Victoria, Monarch, Czar, Early Prolific, Denniston's Superb.

It will be some guide, in choosing the kinds to plant, to observe which varieties do well or otherwise in the particular district, but it will not do to rely too much on this, as a grower may be deterred from planting a good variety because of some failure that he has noticed in it. The cause of such failure, however, may be owing to neglect or improper culture, and not to the fault of the variety.

It is most important to keep the ground thoroughly clean, both at the top and bottom. Many of our cultivators are fully alive to this, but I was particularly struck with the remarkable cleanliness of Canadian orchards, where the ground is kept clean by disc hoes, and the trees by systematic and continuous spraying. I venture to suggest here that our Government might greatly help growers in this matter of cleanliness, and in many other directions. We do not like any fussy interference in this country, but the Government may do much by giving systematic help. I had opportunities of observing how this kind of help is given in Canada, where I travelled through some of the fruit-growing districts with a Government Inspector. His business was to see that packing was honestly and properly performed, and also that the trees were systematically sprayed. The inspector was welcomed by most of the growers, who questioned him on many points; and he was ready to answer all questions, and help with any difficulties that presented themselves.

Experimental and practical work is carried out most carefully at the four Government stations in different parts of the Dominion, where the results of all experiments and trials are carefully tabulated and put at the disposal of all applicants.

Can we not urge our Government to do likewise?

If crops are heavy, it pays to go over trees of some varieties of the larger kinds, such as Lord Derby and Warner's King, and thin the crop; even half-grown fruits fetch a fair price early in the season, before the "Americans" come in. Some soft varieties need gathering before they are quite ripe, but all late varieties should be left until they are fully matured, otherwise the fruit becomes shrivelled and unsaleable before the end of the season.

Grading and packing are most important considerations. It often pays to select the best fruits only for market, and by carefully and tastefully packing these (in the case of the better-class fruits with tissue paper) in flat boxes, more money may be made from them than from the whole crop, including smaller fruits.

If it be necessary to send larger packages to market, select fruit of even size (and of course only one variety) in a package.

NOTE:—Mr. G. Bunyard and Mr. J. Cheal having given lists of the varieties of fruits they recommend, attention is called to the list published by the Society—see page 101.

(B) GRADING AND PACKING FRUIT.

Mr. JAMES HARPER (Dublin) : The grading and packing of fruit have until quite recently been considered by the majority of fruit-growers in the United Kingdom as of secondary importance. The primary objects appear to have been to grow large quantities of selling varieties, to sell them in returnable hampers, and to consider economy rather than efficiency, so that even if their produce only realised low prices they would still make a profit. Recently attention has been drawn to improved methods of grading and packing by the superior work of other fruit-growing countries, and it has now come to this—the home grower who desires to make fruit-growing pay must devote more time and attention to grading and packing, if he is to hold a place in the home market against his foreign competitors.

There does not appear to be any question as to home-grown produce being equal, if not superior, to most of that imported ; and it is beginning to be appreciated that, provided it is graded and packed thoroughly well, it can hold its own with the bulk of the importations from abroad, if it does not eventually render much of these importations unnecessary. At the outset one suggestion may be urged. If the home grower will, in the future, turn his attention to growing fewer varieties, and growing these of better quality and more even in size, he may be able to get a better return than at present. In a sentence, his watchword should be “quality, not quantity.”

In 1902 the Department of Agriculture and Technical Instruction for Ireland issued a pamphlet upon fruit-packing. This pamphlet was the result of much thought and investigation, and has further been very considerably adopted in Ireland. From it I quote the following :

“The Department are informed that the systems in common use in Ireland for packing fruit are capable of very great improvement, and that the adoption of a better and more uniform system would enhance the value of Irish fruit, and lead to an increased demand.

“In order to ascertain in what way they could assist the fruit-growing industry in this direction the Department appointed a small committee of experts to inquire into the systems at present in use, and to make recommendations for their improvement.

“This committee, after having made exhaustive inquiries, have submitted the following report :

““While the best Irish growers market their fruit in a most creditable manner, yet they do so without any recognised trade standards as to grading and packing. The main object of our recommendations is to induce all parties concerned to adopt such standards of grading and packing as will tend to *largely increase* the sale of Irish fruit by establishing perfect confidence in the buyers and the public that all packages will be, as to grade, quality, count or weight, exactly what they are described to be.

““At the same time, we are aware of the practical obstacles in the way of the immediate adoption of our recommendations, and especially in regard to packages now in use, which it is proposed to discontinue.

These packages may, and probably will, be used as long as serviceable; but their places should be taken as soon as possible by the standard packages hereinafter described. As the loss involved by making the change will not be considerable, and as under the new and improved conditions a substantial gain may be looked for, growers are strongly urged to adopt the standard packages as rapidly as possible. If they do so, the cost of manufacture, by reason of the great increase in the demand for packages of fixed sizes, will at once be considerably reduced: 30 to 50 per cent. reduction in price is anticipated. This will lead to more general use of non-returnable packages, owing to their low cost, and the cost of marketing the fruit will thus be reduced. It is likely that when the fruit always comes to market in clean, new packages of uniform sizes, an increase in sales will follow, as the time of both the buyer and salesman will be saved through obviating the necessity for examining the contents of each package.

“The grower is assured that the experience of all the most successful fruit-growers is that too much attention cannot be given to the packing and care of his fruit. Cleanliness must always be strictly observed: the cleaner the package, and the more tasty the “get up,” the more certain it is that the fruit it contains will command a good price.

“The *grading* of all kinds of fruit is of the utmost importance. The old-fashioned way of putting small fruit at the bottom of the package and “topping up” with large fruit, besides being dishonest, is sure to lower the price in the future to the producer, and causes an amount of suspicion, which is inimical to the best interests of the trade. Mis-shapen, very small, or bruised fruit should never be packed with the best.

“If these recommendations are adopted, we consider that the Department of Agriculture should issue stamps or brands, with which the holder may mark his packages as “standard” packages, according to the schedule detailed below. The Department might allow its inspectors from time to time to examine packages put up by the holders of these stamps or brands, and in case of abuse they should withdraw the right to use the stamp. The value of such a mark on the packages, as well as on the packing paper, must be obvious alike to grower, packer, salesman, and the public.

“SCHEDULE.

“Section 1.—*Gathering.*

“Apples and Pears must be hand-pulled. “Windfalls,” or fruit shaken off trees, must not be mixed with hand-pulled. Discretion must be exercised as to the best time to pull late-keeping Apples and Pears. (See Department’s Special Memo. on Fruit Culture.) Apples and Pears of non-keeping sorts should be packed for market as soon as ready for use, so as to be handled only once. All other fruit should be gathered straight into market packages and only handled once. Pickers of soft fruits should sort out the fruit as evenly as possible into different grades as they go along.

“Section 2.—*Grading.*

“Apples, whether packed in large or small packages, cannot be too carefully graded. The best Apples should be graded by passing them through rings, as follows :

BEST COOKING APPLES.

Above $3\frac{1}{4}$ inches	will be classed	A
„ $2\frac{3}{4}$ „	to $3\frac{1}{2}$ inches	classed B
„ $2\frac{1}{4}$ „	$2\frac{3}{4}$ „	C
Under $2\frac{1}{4}$ „		D

BEST DESSERT APPLES.

Above $2\frac{1}{2}$ inches	will be classed	A
„ $2\frac{1}{4}$ „	to $2\frac{1}{2}$ inches	classed B
„ 2 „	$2\frac{1}{4}$ „	C
Under 2 „		D

“The grading of Pears must be done so that fruits fill standard packages evenly. The test of correct grading must be the regularity and good fit of the layer in the case, as Pears are sold by count, and fruits should be graded so that they will pack in fixed counts of uniform size.

“The grading of soft fruits should be into large, medium, and small. The grower should see that such fruits are properly sorted out into these three sizes.

“Section 3.—*Packing.*

“It is recommended that in the case of very fine fruit—where it is of sufficiently high quality to warrant special packing by count as well as by grade—packages holding one, two, or three dozen selected Apples, Pears, or Peaches be adopted. These packages can be bought as “nest” boxes. It is also recommended that selected large Apples, Pears, or Peaches be packed in single layers in flat baskets or boxes. These packages show fine fruit off to great advantage. The 1-lb. box for forced Strawberries, and the 1-lb. punnet for Strawberries, Raspberries, Cherries, Dessert Gooseberries and Currants, are strongly recommended, the package being of nominal cost, and punnets non-returnable, and made up so that it gets a minimum of handling, and by its lightness always keeps fruit in the best condition. One-lb. punnets should be packed in crates holding sixteen, twenty-four, or thirty-two each, the top layer of punnets being covered with a sheet of clean paper, and above that wood-wool. Where it is desired to pack choice selected fruits in less quantities than 5-lb. packages, the choice of package is left to the initiative of the grower.

“In regard to Grapes and Melons no absolute standard can be fixed for packages. It is recommended that strong, flat boxes with Grapes in one layer be adopted, and that the finest wood-wool only be used for packing Grapes, Melons, and Peaches.

“All packages should be of wood where possible, and be free and non-returnable. Where baskets are used they are returnable. All packages should bear such a label as the following :

“(SAMPLE LABEL.)

PERISHABLE.—DELIVER AT ONCE.	
APPLES—GRADE A.	
From (Name), _____	
(Address), _____	
Sent (Date), _____	
Boxes in _____	Bundles. _____
To (Name), _____	
(Address), _____	
Per _____	Ry. (State if Passenger or Goods.) _____

or if boxes, they should be branded, stating as follows :

“The grower or society’s name, address, and distinctive brand, if any.

“The kind of fruit contained.

“The grade—either A, meaning “Extra size”; B, meaning “First size”; C, meaning “Second size”; or D, meaning “Small size.”

“The sizes referred to are those named above in Section 2.

“Section 4.—*Standard Packages and the Fruits for which they are intended.*

“The standard of weight suggested is 5 lbs. The standard packages are multiples of the standard weight ; thus, standard weights and standard packages will also assure to the buyers a reliable measure. These weights and measures are set forth below :

	Standard Weights		Standard Measures
“(1)	5 lbs., taken as equivalent to	.	1 gallon.
“(2)	10 ” ” ”	.	$\frac{1}{4}$ bushel.
“(3)	15 ” ” ”	.	3 gallons.
“(4)	20 ” ” ”	.	$\frac{1}{2}$ bushel.
“(5)	40 ” ” ”	.	1 bushel.
“(6)	80 ” ” ”	.	2 bushels.
“(7)	120 ” ” ”	.	1 barrel.

“Apples and Pears may be packed in all the above except gallons.

“Damsons and green Gooseberries in all the above packages.

“Plums in all except 2 bushels and barrels.

“Cherries, red and amber Gooseberries in gallons, $\frac{1}{4}$ -bushels, 3-gallons, and $\frac{1}{2}$ -bushels.

“Strawberries, Raspberries, Currants, and Tomatos in gallons and $\frac{1}{4}$ -bushels.”

Nearly four years have elapsed since this pamphlet was issued, and it may now be of interest to consider how the recommendations therein made have been received by up-to-date growers, and, in the light of the experience gained, what may now be considered the best methods of grading and packing to continue.

The general opinion is, undoubtedly, that those growers who have adopted the cheap non-returnable boxes and barrels for marketing all the best-quality fruit, especially Apples, have been successful in getting better prices in the Irish and English markets. That careful grading has also been productive of higher prices. That the one- and two-dozen "flats" or boxes for the very best dessert and cooking Apples have been decidedly popular with the best buyers of the choicest fruit.

The use of punnets for Strawberries and Raspberries, where they are to be used for eating, promises to become almost universal in Ireland, the sale of punnets this year being, I am informed, exceptionally large. The flats to hold three dozen dessert Apples have not met with public approval; they proved to be too long, too clumsy, and too expensive, and their use by the majority of growers has been discontinued. The three-dozen flat for cooking Apples has, on the other hand, been found serviceable and popular. The 80-lb. standard box has not been used to the extent expected: it costs as much as or more than the barrel, which holds 50 per cent. more; and the "pot" not being known in Ireland as it is in England, this size has not met a public want in Ireland.

Grades C and D of cooking and dessert Apples are not now packed in flats; it has been found that only A and B grades paid for the extra trouble in these boxes.

A new package for delivering soft and stone fruit to the bottling and canning concerns has been tried and found effectual in preventing these fruits from being crushed, bruised, or broken in transit. This package has helped the fruit preserver very considerably; the flats are returned in the crate, and are washed after use. In some instances grease-proof paper has been used as lining with advantage. A new 3½-lb. punnet for Blackberries has been tried; it has found favour with the private user of Blackberries and has apparently come to stay. A crate has been made to hold sixteen of these, and another holding ten 5-lb. boxes where the latter has been used for Damsons; this crate has also been found of service. A new flat punnet for Strawberries and Raspberries has been tried this year; so far it has not found the favour desired, although in some respects it is an improvement on the old punnet. A new punnet holding one quart of machine-shelled and sorted fresh Peas has been tried with satisfactory results by one grower.

I show samples of the different packages recommended in the pamphlet, excepting those not now in use. The prices of these boxes per gross, f.o. rail Dublin, are marked on their tops, these prices varying, of course, with the price of timber; also of the wood-wool used, which must *not* be resinous for obvious reasons.

The barrel for Apples is, of course, the most used of all the packages. Many growers pack their first- and second-grade fruit in these at the time of gathering, being careful to avoid bruising. Many barrels have been held back and marketed in the months of March and April in the following year; the fruit has been found to keep very well. The bulk of the barrels are sent to market without the head in one end, but with the fruit piled up, covered with hay and tied; where barrels have been properly headed an extra price has been paid.

The use of distinctive brands by growers has not been adopted to

the extent expected. Many have stencilled or branded their names, the sorts and grade on the boxes or barrels, and this has perhaps served the same purpose. Well-known good packers' boxes and barrels have in many cases not been opened by the salesmen when selling, the name alone being sufficient to sell them at best prices.

In conclusion I would like to sum up the whole matter from the several points of view of all interested in fruit growing :

(1) *The User*.—The private buyer of all kinds of fruit, when ordering certain sizes of Apples in certain kinds of standard packages, knows exactly what he is getting. The more a standard of non-returnable package is adopted and the better it is known, the more certain it is that the private user will appreciate and support it ; uncertainty as to sizes, grades, and the trouble of returning empties are all inimical to confidence between the buyer and the seller.

(2) *The Retailer*.—Fruit in non-returnable boxes and barrels saves time ; they can be put in the shop front on view at once ; all trouble of returning empties is avoided, and sales are often larger, customers taking "original packages" instead of single pounds of sorts that please the eye. Retail fruit shops are rendered much more attractive by the display of fruit unbruised and sound in original packages.

(3) *The Salesman* or middleman prefers foreign fruit very often because, especially in the case of Apples, he has no trouble nor expense with "empties" ; his sympathies are bound up with non-returnable and uniform packages and even grading, and always must be. Sound fruit, well graded, in clean non-returnable and not charged packages, must assist his business enormously.

(4) *The Carriers*—railways more especially—do not want to be bothered with "empties" ; they carry them at a loss, and welcome fruit in new sound boxes or barrels which pack more closely and tightly than hampers. They would always prefer to carry high-class, well-graded fruit, rather than low-class, poor fruit. The outcry against high railway rates loses its force, or a great part of it, in the case of expensive or high-priced fruit because the grower feels it less, whereas on fruit which "hardly pays for carriage" any rate charged must appear to the grower as excessive.

(5) *The Grower* who grades his fruit carefully, who packs it neatly in non-returnable packages, is conforming to the trend of the times ; he secures the goodwill of the user, pleases the retailer, is supported by the salesman, and is therefore more likely to be successful in his work. It must not be understood that *all* the fruit-growers in Ireland have adopted all or indeed any of the recommendations that have been made in this pamphlet, or that if similar recommendations were made in England they would be adopted to any great extent at once. But it may be taken as certain that in these proposals a standard has been set before all growers. Wherever this standard has been tried it is believed to have been productive of benefit to all concerned. Other countries—America, Canada, Australia, and New Zealand—have standards to which the growers in those countries adhere, for export at any rate. The result is co-ordination, uniformity, and mutual understanding between grower and user of fruit. If a standard of grades and packages could be once established throughout the United Kingdom, the fruit industry would

receive a tremendous impetus. Fruit culture is already being looked upon as perhaps the most promising field for effort in agriculture. The produce has only to be marketed in an up-to-date, businesslike manner to render success certain and to resolve sanguine hopes into tangible realities.

Mr. HERBERT PANTIN: As exporters of box-boards, we find that the number of small packages used in trade is continually increasing.

In the tea trade, the pound packet has taken the place of the tea chest; bottled beer is rapidly killing the cask beer trade; and everywhere the idea seems to be for the manufacturer to produce a package which can be handed direct to the consumer. By labelling the small package, the manufacturer advertises his wares and works up a valuable goodwill.

The retailer likes the system, because pilfering and the labour of weighing and packing are avoided.

Handling Fruit.—Quite apart from expense, everybody knows that fruit suffers in quality every time it is handled. In certain colonies where native labour is employed, there is a decided objection to fruit that has been re-packed.

Quite apart from the question of daintiness, there is the fear of leprosy. The way fruit is sold in this country, especially in London, is a matter of much surprise to strangers.

During the last two years we have imported from the States some hundreds of thousands of neat "berry-baskets." Strawberries packed in these realised 2*d.* a lb. extra profit in Glasgow, Birmingham, and other cities—the fruit being packed straight into the baskets arrived fresh and clean. Now in London our "berry-baskets" were emptied out and the fruit was retailed by the pound in paper bags.

Small Packages of one layer.—That fruit can be sold in this country in small boxes is proved by the ready sale of Spanish Greengages in boxes seven inches by six inches by three inches, and Italian Figs in similar sizes. Our foreign correspondents recommend a one-layer package, so as to avoid bruising and to allow the fruit to "breathe."

Small Boxes for Pears.—In a box measuring ten and a half inches by eight inches by three inches, a South African friend of ours put up half a dozen Pears which sold in Johannesburg at 1*s.* 3*d.*, or over 2*d.* each Pear. By printing on the tops of these boxes and by using wrapping papers, the grower can advertise his fruit direct to the consumer.

Wrapping Papers.—Up to the present time wrapping tissue papers (which cost only 3*s.* per 1,000) seem to have been very little used in this country. They can be had in various colours, and the 3*s.* includes printing the grower's name and trade mark on each wrapper. The appearance of a package with the various fruits wrapped is a great contrast to the appearance of a box filled with unwrapped fruit.

Trade Mark.—If a grower intends packing good fruit, it is worth his while to register a trade mark; this has already been done by one or two British growers.

Small Boxes for Apples.—I would suggest that even Apples might be put up in small boxes. The Canadian and Australian fruit-growers must pack in barrels and bushel boxes, because of the freight, but there seems

to me no reason why really good English Apples should not be packed even in quarter-bushel boxes. This would allow the system of "topping" (so dear to the hearts of some of our growers) to be practised with success. It is useless to try to catch the greengrocer with topped fruit, but it is just possible that it might go down with the public—anyhow at first. I bought a bushel box of English Apples (as advertised) last year. The top layer was beautiful, and my servants (who ate them) were quite enthusiastic about them. But I thought that the third and fourth rows, left for my use, were of very poor quality.

Export of British Fruit.—There is no reason why, in addition to the home market, a good trade should not be done in British fruit abroad, even to places it takes four weeks to reach by steamer. Fruit can be carried at a temperature of forty degrees, and having this year sent over fifty tons to various parts of the world, we know that it can occasionally be sold at a profit, provided always it is carefully graded and packed, for to ship anything but first-class produce a long distance is throwing money away.

Cooking Varieties.—The grower might also bring his name before the public by enclosing recipes for cooking some of the varieties he sends out.

In conclusion, I hope you will pardon my reading two extracts from letters rather unpleasant for English packers to listen to.

Extract from a letter dated August 22, 1905.

"*Plums packed in Cold Store.*—There were hardly any of these arrived in good condition, the whole fault lay in the packing, and we are surprised that anything but the ordinary plum-box was used. It is next to impossible for twenty-three pounds of Plums thrown in a box to travel thousands of miles and land in good order. When one goes it starts the whole box. Fruit boxes of single layers only should be used, and each Plum wrapped in a tissue wrapper with wood-wool at the top and bottom of the box to save bruising or shaking."

Extract from a letter dated August 30, 1905.

"When our season comes round we will send your friend some sample boxes of plums to show how they should be packed."

The fruit must breathe, and should therefore be placed in one-layer shallow boxes.

Dr. GOETHE (Darmstadt) was unable to be present, but sent a paper to the Conference. In his paper he stated:

The profits to be derived from the sale of fresh fruit depend very much on large quantities of those fruits which are most appreciated and most in demand being available for market. Small quantities of fruits of several different varieties do not pay commercially. Everyone connected with the business should be fully conversant with the details of the trouble and care taken in gathering, sorting, and packing produce which have been of so great benefit to the fruit industry of other countries.

The following notes are arranged in the order in which the fruits successively ripen.

STRAWBERRIES are often put on the market in by no means the most appetising and attractive form. The fruits are badly selected and frequently unripe; and insufficiently coloured fruits of different sizes are to be found in the same basket. Each package should contain in every layer fruit of a uniform size, and higher prices can be realised by such selection. In order to avoid damaging the appearance of the fruit by hand gathering, Strawberries are gathered with scissors into baskets in Dresden and other places; sometimes stout paper or cardboard baskets are used.

America, however, leads the way in the management of the Strawberry harvest. The demand for Strawberries and for soft fruits generally, is there so large that thousands of acres are devoted to their cultivation, and the growers use every endeavour to offer the fruit to the public in as fresh and untouched a condition as possible, and in a convenient manner. Gathering begins as early as possible in the morning, as it has been found that fruit which is picked during the warmer part of the day does not possess its full flavour nor travel well. Gathering scissors are generally used, which both cut and hold the fruit. The women who are employed in gathering become extremely skilful in selecting only uniform fruits for the punnets. These are lined with and, after filling, covered with Strawberry leaves, so as to keep the fruit as fresh as possible. The punnets, which only cost about one halfpenny each, are collected (when filled) by other employés and are packed in cases which are constructed of wood, with spaces between the boards, so as to allow the air to circulate freely. This system prevents the fruit from becoming heated, and is generally adopted in America for the despatch of all kinds of soft fruits. Fifteen punnets are placed at the bottom of the case in three rows of five each. Each row is covered with a thin board on which a further fifteen punnets are placed. The cases generally hold three layers, or forty-five punnets in all, and after being secured are carefully carried away by their rope handles.

The carriage to distant places is preferably by water, when possible, as the fruit keeps better in this mode of transport. Arrived at their destination, the cases are received and put on the market by the agent, so that the public is able to buy the Strawberries fresh, untouched, and in the best condition possible, only a few hours after their being gathered, and better prices are consequently obtained.

Another kind of case is used in the neighbourhood of Metz, where large quantities of Strawberries are grown for the preserving factories. It consists of shallow trays which fit into a frame made of crossed laths. A strong close lid completes the case, which is held down by two iron rods running through the laths, which are sealed with lead. The fruits lie spread flat and close to each other on the trays, and arrive in good condition provided the railway servants handle them with sufficient care.

For the despatch of Bilberries and Cranberries shallow chip baskets of oblong shape and fitted with handles are used in Odenwald. These hold about 12 lbs. of fruit each, and when filled, canvas or some other coarse material is sewed over the top, or when there are waggonloads the baskets are placed one across the other. This form of basket is made in

Saxony, and, by alternating rows of white and green chip, a very attractive appearance is presented.

MULBERRIES, RASPBERRIES, and BLACKBERRIES require still greater care in gathering than Strawberries, as they are far more perishable. They can only be transported short distances, and the same forms of baskets and cases are used as for Strawberries.

GOOSEBERRIES should be gathered two days before they are quite ripe, otherwise they become mealy. Currants should be allowed to become as ripe as possible, so as to assist the natural sugar of the fruit in counter-acting their acidity. These two kinds of fruit are despatched in baskets of smaller dimensions and require but little care, as neither kind pays for despatch over a long distance on account of their low values, so they are usually sent to the nearest market. They are, moreover, sufficiently firm to be transported without any special precautions.

A few words on the all-important subject of ladders will apply to gathering the fruits of other trees. In the Tyrol, a ladder is used which consists of a single shaft through which the rungs pass. This form of ladder is provided with two feet to prevent it sinking into the ground ; in some cases the shaft is long and the top portion, without rungs, rests against the boughs of the tree, and in other instances two pointed poles are fastened to the main shaft just above the top of the rungs, which form supports. In Würtemberg they use an ordinary ladder with spiked heels, and supported by two spiked poles. By using this form of ladder a higher point can be reached, but it requires the services of three men to erect it, which is not the case with the Tyrolean. In Werder, near Potsdam, the top rung of an ordinary ladder is made very wide and strong, and the head of a prop-pole is passed through a hole in it, which is kept in position by a peg or a nail.

A hooked stick is sometimes used to connect a ladder with a single branch from which it is desired to pluck the fruit. Besides the hook at the top of the stick by which it is attached to the tree, there is another on a ring which can be adjusted at different heights on the stick, on to which the ladder is hung by one of its rungs. The basket best adapted for picking cherries into is circular in shape, rather wider at the middle than the top, and supplied with a handle on which is threaded a hook by which it can be hung from the ladder or the tree.

CHERRIES are gathered before they are quite ripe so as to prevent their becoming over-ripe on the road. In the Rhineland cylindrical-shaped baskets with flat wicker lids, holding about twelve English pounds, are used for the transport of early Cherries and other first-grade fruits, which are mostly despatched to Hamburg and its neighbourhood.

The market basket generally is one with handles, slightly narrower at the bottom than at the top, and holding about 50 to 60 lbs., similar to the old-fashioned English laundry baskets ; when filled these are covered with wood-wool, or leaves, and a piece of matting is sewed over the top, which is protected by a few withies bound over the top in the form of a crossed arch or crown.

APRICOTS are gathered by hand in dry weather in the morning, and care is taken to pick only the ripe fruit, and to pick over the same trees for several days. A very convenient form of step-ladder for this purpose is one 6 ft. long by 4 ft. 9 in. wide at the base, and 5 ft. high.

As Apricots are of an extremely perishable nature, those that are intended to be sent to a distance should be gathered two or three days before they are fully ripe: that is, as soon as they begin to colour on the shaded side; and the same should be done with the fruit intended for preserving, as only firm-fleshed perfect fruit can be used for that purpose. For the usual market-fruits the same form of basket is used for Apricots as for Cherries. Dessert fruit, however, is wrapped in two thicknesses of tissue paper, and then embedded in fine-cut wood-wool in a wooden case with ventilation holes at the side, the lid of which can be sealed before despatch. Another form of case for sending fine stone fruit by post is made of corrugated strawboard with square divisions such as are to be found in egg-boxes. These are generally made for two layers of the fruit with a sheet of the board between. The interstices can be filled with almost any soft material, but one of the best is the coloured cut strips of paper (known as St. Joseph paper), which gives a very attractive appearance to the whole.

APPLES AND PEARS.—In several cases these fruits are despatched from the orchards to the railway or other destination in carts without springs, during which process the fruit is much shaken and receives fresh bruises. To minimise this, straw is generally placed on the bottom and sides of the cart, and more straw is put between the fruits. It has also been found that fruit packed and transported in sacks like potatoes travels better. Generally, it is despatched in open or closed railway waggons, but transport by water is far preferable, as this method obviates any shaking and damage. When fruit is sent by rail, care should be taken that air can get to the fruit, so as to avoid it becoming heated, and consequently deteriorating, and that the railway truck is thoroughly clean and has no unpleasant smell, as this would be communicated to the fruit all too easily. In all cases, a thorough sweeping-out of the truck is most beneficial.

It is impossible to define the exact time when the different varieties of fruit are ready for packing, as this can only be arrived at by careful observation, and the dates vary in different years according to the weather and other causes.

All the better-class fruits should be gathered by hand in order to avoid bruising. It is most important to pick the fruit with the stalk intact. A half-broken stalk, or no stalk at all, gives the fruit an unattractive appearance and lessens its market value. The fruit should come away from the branch quite easily. The gathering should be done in fine weather, and not before the dew has disappeared in the morning. Women are much more skilful in gathering than men.

Some people employ one of the many forms of fruit-gatherers, of which there are a large number of different patterns on the market. One of the best consists of a shaft which is held in the left hand, and by a simple contrivance the fruit is gripped by three "fingers" at the top on a string being pulled with the right hand. Another form consists of a net somewhat like that used for catching butterflies, the rim of which is made of tin and has a few projecting teeth on the inside at the top, in order to assist in detaching the fruit. The first-quality fruit is usually packed in cases which hold a definite weight of fruit, and which are

provided with holes at the side in order to allow the circulation of air. The most important varieties are wrapped in tissue paper, the colour of which is changed according to the variety of the fruit, and the whole is embedded in shredded paper or wood-wool, and the top is nailed on. In America the fruit is generally packed in barrels, which are filled to above the top of the barrel, and the lid is pressed into position by an extremely ingenious form of foot-lever.

Careful sorting into various sizes is also most important, and it has even been suggested that the small fruit on a tree should be destroyed in June, as the larger and finer the fruit the better the result, and small, undersized dessert fruit cannot find a market; the fruit-grower should therefore discard the maggoty, small, or otherwise unsuitable fruits.

With regard to trade requirements, a thoroughly satisfactory business can only be developed and expanded when the buyer can depend on the seller delivering the fruits in a condition quite up to his expectations and orders. Finally, the most careful packing is absolutely essential. What is the good of having the best fruit if it arrives covered with bruises or other defects, just because the seller did not understand how to pack it? Much has been learnt on this subject, but much still remains to be learnt, if the growers of table fruit intend to profit as fully as possible by their opportunities.

THE DISCUSSION.

THE PRESIDENT: I can bear testimony to the very great difficulty of packing delicate fruit. I live only twenty-five miles from London, and yet it is difficult to get peaches on the table entirely free from bruises. Of course, with more careful packing the results would be better. We all have seen the exceedingly fine fruit which has been brought from the Cape of Good Hope, and from California, and landed in this country in a first-rate condition. There is one suggestion I should like to make with regard to the packing paper. I believe it will be found that some of the Japanese papers are exceedingly well adapted for that purpose. They are tough and very pliable, and I know that for very delicate Peaches it is very difficult indeed, if not almost impossible, to keep the paper nice. I am in favour of supporting home industries, but we are so closely allied to the Japanese that we might almost call it a home industry.

REV. G. H. ENGLEHEART: The question of Government support has been very lightly touched upon, and of course it is a question about which it is scarcely profitable to say much. We know that our Government have not supported this industry. I was speaking to a member of Parliament of considerable influence the other day, and he said: "Well, it has always been in the English character that these things should be left to individual effort and not to the superintendence of a paternal Government." There is a great deal in that. There is no doubt that success in all departments has been largely initiated and forwarded by individual effort. I am one of those who would not care to be always in the leading-strings of a paternal Government, but one sometimes feels one would like a little help. I myself have lately taken in hand a small orchard down in the Wiltshire country which in the old days was rather famous for its Apples, and especially for its cider

fruit. That industry has very much died out, and although there is a large area of land, of good land, under orchards—that is to say, under old Apple and Pear trees, especially Apple trees—the land is practically derelict, and hardly anything is done with the trees or the fruit. Take my own position. I plant two or three acres of young trees—choice Apples for dessert, and a few of the best cooking varieties—taking the greatest pains in preparing the ground, in getting good trees, in keeping the ground and trees clean. I suppose no one would be allowed to erect contiguous to your house a small-pox hospital, or an open asylum for fever patients, without any disinfectants. But these orchards which surround mine are practically asylums for the American blight and for the Codling moth, and so far as I can see it will take several years to get rid of them. I spray my young trees to stop the American blight, and we discourage the Codling moth all we can, but owing to infection in my own plantation there is a very comfortable asylum being erected for them—in fact they are booking places in my orchard two years in advance. But, speaking seriously, I think that the old sharp line between Agriculture and Horticulture must be broken down and our Minister of Agriculture—such as we have—should give a helping hand to our orchards. I think that some penalties and restrictions should be imposed in the case of these centres of infection which hinder all our efforts towards better things. I think our Council and our President and officers at headquarters might agitate in that direction.

The PRESIDENT: The Minister of Agriculture is also Minister of Horticulture.

Mr. H. F. GETTING (Ross): In planting a large area, you should carefully study the blossoming times of the different varieties, for unless you do, and unless the varieties blossom at the same period, you will not get the advantage of the cross-fertilisation. It has been said that salesmen are in favour of our using boxes. I do not think that is the case generally. They greatly depreciate the sale of boxes of fruit, and they only take them up for the reason that they want to confine their clients to themselves. It is a difficult thing to recommend varieties of fruit for growing in this country. I think a great deal of harm has been done by recommending certain varieties to everyone, because the conditions differ in different districts. The Ecklinville seedling is good in many districts, but a grower has told me that in parts of Worcestershire it will not grow at all. In fact he has cut down some very fine trees simply because they will not bear. As to a continuous supply of Apples for the English market, it is said you should grow a large quantity of one variety. That I quite agree with. But that is not sufficient unless you are speaking of perhaps the good croppers at the end of the season. Cool storage is also needed to provide a continuous supply for the market, and this subject has been very much neglected. In America pamphlets are sent out, not only stating what are the best varieties for a continuous supply, but giving coloured illustrations showing how good fruit is affected by being put into cool storage. The fruit should be placed in storage immediately after picking, and it should be fully matured before it is gathered.

Mr. F. W. MOORE (Dublin): What we want is good and well-grown fruit. Have we got Apples as good as the American Apples, and can we

catalogue them? I think nobody will hesitate to say that better Apples are grown in the British Islands than are grown in America. There are more bad American Apples sold in this country than bad English Apples. I am always sorry when I see people buying the bruised wretched stuff from America, and discarding our own fruit. The fault is thrown by the growers upon the railway companies. They are called upon to carry all kinds of things, and at rates that will not pay. This stuff should never have been sent to the market. Good fruit is sent to the railway companies, but not in sufficient quantities. Let them know that they can have a constant supply from a certain given centre, then the railway companies would meet us fairly and bring down their rates. Give us 'Lord Grosvenors,' give us Lane's 'Prince Alberts,' and we can sell any quantity of them at good prices. This has been said by salesmen. It has been asked, what is the Government going to do? It is not often that we are progressive, but in this matter we are. In the matter of the protection of trees, the Irish Board of Agriculture insist that they must be sprayed. Pests will always be there unless the trees are sprayed. That is where we are so far behind the Americans. In all new plantations the trees must be sprayed. One point I should like to emphasise. The small grower has the advantage. That has been our experience in Ireland; and I have seen fruit sent from there and elsewhere by comparatively small growers, and realising very large profits. This is an industry for the small grower, and it will be one of the most flourishing and prosperous if it is worked out on the right lines. We can meet foreign competition if we like by growing good fruit. The best sorts to grow in Ireland are Lane's 'Prince Albert,' Bramley's 'Seedling,' and 'Newton Wonder.'

Mr. JOHN CROOK: Some sorts are prone to canker, and some the reverse. Some of the kinds I could name are absolute failures, where such varieties as the 'Annie Elizabeth' are a perfect success. I could name others. But where are we to draw the line in taking up different varieties? I believe we shall never get on until we have educated the people—unless we have some means of diffusing knowledge throughout the country we shall never move forward as we wish.

Mr. GEO. BUNYARD, replying on the discussion, said: I should like to say that it is most important, in planting Apples on the Paradise stock and Pears on the Quince stock, that the junction be placed 2 inches below the soil. When above the level of the soil, the junction is restricted and the grafted portion is strangled. If put under the level of the soil, the stock swells with the scion.

I have been reading in the *Westminster Gazette* an interview with Mr. Garcia, of Covent Garden, in which he says: "There can be no doubt that the fact that fruit can be put on the English markets from all parts of the world without any duty is conducive to this end [the development of the fruit trade]. A duty so small as 5 per cent. would be sufficient to reduce the shipments fully 50 to 60 per cent. That would be the case, for the reason that a 5 per cent. duty all round would equal the profits of the shippers. They are now satisfied with that; but if a duty were put on of 5 per cent. you would take their profits away, and they would ship a less quantity in order to get an increased price. The prices

of American Apples and French and Spanish fruits would thus be raised."

So far as I am concerned, I do not see why that trade should not be strangled. These shippers ought to do something for the up-keep of this nation—our Army, Navy, and Civil Service.

The PRESIDENT: And the Royal Horticultural Society!

Mr. BUNYARD: I think something ought to be done, and the time has come when the home grower should be considered. People talk about agriculture as if it were an old and worn-out industry. It is really still the largest industry in this country. I fear it is the worst treated, and it suffers by the importation of fruit pulp from Belgium. Why should that not pay duty? We have to pay duty on sugar. As to the best commercial varieties, I agree with a great deal that Mr. Cheal has said, and have omitted several varieties from my list. It is impossible to make out a list to suit all places. Every grower ought to have a trial plantation of half an acre. He should test every sort that comes up and then use his own judgment.

The question was asked: If, in grafting on Paradise or Quince stock, the junction was 6 inches above the ground, what should be done?

Mr. BUNYARD: In that case earth it up.

Mr. CHEAL: I was glad to hear the point alluded to of the great injury which might be inflicted upon us by our careless neighbours. The Government might help us in the matter. I do not like to ask for Government interference, but a sympathetic Government should help us very much as is the case in Canada. In Canada the Department sent an inspector to the principal fruit-growing districts, and his business was to see that certain conditions were carried out. Help sympathetically given is very useful indeed. Therefore we need not be afraid of the help the Government might give us in that direction.

Question: Is it not a fact that in Canada imprisonment is the penalty for people who do not spray their trees?

Mr. CHEAL: Up to three months in America.

The PRESIDENT: We have all derived much information from the Conference, and from the very interesting papers which have been read and discussed. The subject of "Insect Pests" is going to be dealt with specifically to-morrow by very competent persons, who are giving all their time and attention to the subject. As to the question of a 5 per cent. duty, if you could persuade the electorate to impose it it might be a useful thing. But I think, with intelligence and observation we shall not do badly. I am delighted to hear that it is no longer in some countries legal to "top" fruit. I hope it may become so here. We have derived much advantage from listening to competent authorities to-day on several matters. The Government might do a great deal more, but unless you are always pegging away they will do nothing for you.

Question: In view of a possible export trade in fruit, what country would receive our fruit without its paying a heavy protective duty?

Mr. BUNYARD: South America, I believe.

The Conference then adjourned till the following day.

SECOND DAY, OCTOBER 11, 1905 (Morning Conference).

Subject—

“FUNGOID AND INSECT PESTS AND HOW TO
MEET THEM.”

*Chairman—*F. S. W. CORNWALLIS, Esq., President of the Royal
Agricultural Society of England.

The CHAIRMAN, in opening the proceedings, said: As one of the Council of the National Fruit Growers' Federation, and as one who has occupied the Presidency of that Association, I am sure I shall only be expressing the wish of the Council if I take this opportunity of acknowledging the great assistance which the Royal Horticultural Society has been to us, not only in the matter of this Conference, but also in their hospitality in allowing us accommodation in this handsome building. This morning, we have papers on fungoid and insect pests—pests which do great damage to our fruit crops—and any information we can obtain for dealing with these pests will be of great value to us. I hope and believe we shall have a very practical discussion this morning. One of the pests which occurs to my mind is the black fungus. This has been a source of great mischief to us in the Maidstone district. Then there is the Black Currant mite, which has worked such havoc. What we have to do is to learn all we can individually about these pests, and then, as fruit-growers, apply our knowledge collectively, so that the experience gained by the individual may be imparted for the benefit of the whole community. The discussion may also show whether or not we think legislation is possible by our combined action. I was in this room yesterday and I gathered that some who had read the report of the Fruit Committee thought the time was hardly ripe for legislation on the subject. We may to-day be able to decide upon some of the lines on which we could ask for legislation, if we are agreed that legislation is desirable. With regard to the compulsory spraying of trees, I feel that we have a precedent in connection with agriculture. We have compulsory sheep-dipping—very much on all fours with tree-spraying. At present, in certain scheduled areas, the law compels people to dip their flocks. If compulsion is found desirable in that case, there is no reason why the principle should not be extended to the spraying of fruit. Then we have another precedent in the fact that cattle imported into this country have to be killed on landing. That, I think, is an analogous case to the demand which has been made in some quarters for the inspection and destruction of diseased fruit-trees and other things, such as barrels, that are introducing pests into this country. Professor Theobald, of the Agricultural College at Wye, will now kindly open the discussion.

Mr. F. V. THEOBALD: In opening this subject on the insect side, I shall follow the advice given me by several of you who are present to-day, namely, to refer only to a few of our most serious pests which have a more than local status.

The number of insect enemies that the fruit-grower in this country has to contend with amounts to over one hundred. Many of these are local, however, and others only occur now and again, such as the Cherry-tree Borer (*Semasia woerberana*) in a few orchards in Kent, the Pear-leaf Miner (*Cemiosstoma scitella*) in parts of Scotland, the Cherry-bud Moth (*Gelechia nanella*), the Social Pear Sawfly (*Pamphilus flaviventris*) in the south of Britain, and the Strawberry Aphis (*Siphonophora fragariæ*) in Herefordshire.

All these and the others are of interest and importance, but it would not be possible to even refer to them to-day.

I am thankful to say Mr. Warburton is going to especially deal with two enemies, namely, the Big Bud in Currants and the Pear Midge.

I should like, if I may, to limit my remarks to the treatment more than the life-history of some of the fruit pests, except where special points in their development call for comment; besides, the life-histories of our worst enemies are well known to us all.

The most harmful insect pests of fruit are undoubtedly the following: the Mussel Scale (*Mytilaspis pomorum*), the Apple-sucker (*Psylla mali*), a number of plant lice (*Aphididæ*), the Winter Moth, the Tortrices, and the Codling Moth (*Carpocapsa pomonella*), the Apple-blossom Weevil (*Anthonomus pomorum*), and the Currant Sawfly (*Nematus ribesii*), together with the Pear Midge (*Diplosis pyrivora*) and the Currant Gall Mite (*Eriophyes ribis*).

The Mussel Scale.—The presence of this scale, now found wherever Apples and Pears are grown, is not always readily detected when present in small numbers, unless the trees are carefully examined. This is owing to the fact that the scale covering the insect assumes the colour of the bark during most of its existence. No notice is taken when it occurs in small numbers, for then it does no harm. We must not forget, however, that all insect and fungoid enemies may suddenly increase. What regulates this plethora of life we do not always know. Some say it is due to the scarcity of natural enemies. The Mussel Scale is preyed upon by minute parasites—Chalcid flies—and by birds such as the blue tit, tree creeper, gold-crested wren, and nuthatch.

Chalcid parasites occur in most districts, but I have never yet seen them in sufficient numbers to hold the scale in check, and in some cases I have seen the Coccid increase in spite of the Chalcids in such enormous numbers that the very existence of the trees has been threatened. Nor are birds capable of holding the foe at bay. On the other hand, I think we shall find that many pests are spread by our feathered friends!

We must, therefore, adopt remedies and not only rely on nature to provide an antidote.

Treatment.—The treatment of the Mussel Scale is best carried out by spraying, unless the attack is very severe, and then nothing but scrubbing will do any good.

A series of experiments conducted during the past two years has shown that several previously supposed remedies are of little avail.

Caustic wash is of very slight use, as it has little penetrative properties and so does not soak under the scales, and get to the eggs, when we apply it during the winter months. Nor can we use it at sufficient

strength to burn through the scale without the risk of serious harm to the tree. The eggs of the Mussel Scale hatch out in June, and the active young soon commence to excrete white waxy threads which make them very conspicuous objects, although very minute. For some five weeks after this, the scale is very soft and can be destroyed by paraffin emulsion. The eggs do not all hatch out at once, the incubating period taking at least two weeks. Spraying should not then take place until about three weeks after the young scale insects are first noticed. There is no doubt that paraffin is the only certain remedy for this and other Coccid pests. But it has to be used with considerable care, as no one can tell what effect it has, unless very dilute, upon the tree.

It has been used for scrubbing the bark for Mussel Scale at the rate of 1 gallon of oil and 5 lbs. of soap to 10 gallons of soft water. The scale is at once killed, but this strength is too great, for in an orchard I have recently treated a few trees have been injured. It was found later that the same quantities could be used to 50 gallons of water with complete success. The trees I refer to numbered some 300, all of which had been heavily sprayed with caustic wash and lime-washed in winter, and yet all the scales remained alive and hordes of young were produced.

In the winter this paraffin emulsion will have similar effect and would not be so liable to harm the trees, but I believe there will always be danger in using paraffin or any other mineral oil. As you know, they sometimes recommend crude petroleum treatment in America, but its disastrous results are only too well known.

Lime, salt, and sulphur wash I have found successful if applied in autumn, but not of sufficient benefit to further advise as a winter wash.

As far as we can see at present, there is no doubt that paraffin emulsion employed in the early autumn is the most efficacious scale remedy, unless we have recourse to hand-scrubbing, and then a strong soft-soap solution would be sufficient when the young are hatching out.

The Apple-sucker.—The Apple-sucker, although widely distributed on the southern, central, and western districts of Britain, is really only a serious pest in Herefordshire, Worcestershire, and Kent.

In those counties it has been harmful for some time, but it has undoubtedly increased very considerably during the last ten or twelve years. Like the Mussel Scale, its life-history is so well known that no further investigation is necessary.

What we learn from its life-history of importance are the following facts: first, that the eggs are laid irregularly in the autumn, on the Apple, the date of egg-laying varying in different localities and in different seasons; secondly, that these ova hatch out irregularly in the spring, the period of incubation lasting for two weeks; thirdly, that the larvæ very soon enter the buds after they have hatched, and are for some time completely protected by them; fourthly, that the adult insects live unprotected on the leaves of the Apple-trees from July until they deposit their eggs in September and October, and even November.

These active hopping adults vary much in colour; when egg-laying is about to take place they lose their bright green hue and become yellow or marked with red, black, or yellow, which will distinguish them, together

with the marked structure of the wings, from the frog-hopper, one of the Cercopidæ often seen at this time on the trees.

Treatment.—The usual treatment has been spraying with quassia and soft soap or paraffin emulsion when the young are hatching out. The best results have been with quassia and soft soap, but at best it is only likely to lessen the amount of attack, for this wash must come in contact with the actual insects to kill them, and as they do not all incubate at once we must keep on spraying for at least two weeks to entirely eradicate them. This, of course, on a large acreage would be impossible.

Another time when contact washes may be theoretically used is in winter to destroy the eggs. Some laboratory experiments have shown that this wash corroded the eggshell, but repeated experiments in the field have shown that it cannot be relied upon. The wash acts only at a certain stage just prior to the hatching of the eggs. Nevertheless much benefit has accrued to orchards where this wash has been repeatedly used, so that it seems some benefit is derived from it.

At present it cannot be advised as a preventive of Psylla.

There is then only one other time when we can get at this insect, namely in the autumn, and from some experiments made it was found that a paraffin emulsion would kill many of the winged Psyllæ, and thus we can prevent egg-laying, and I cannot but feel sure that this will prove to be the best means of attacking this insidious enemy.

An emulsion of 1 gallon of paraffin and 10 lbs. of soft soap to 50 gallons of water can safely be used at the time when the leaves are ripe and ready to fall.

Woolly Aphis.—The world-wide woolly aphis, or so-called American blight, has been very evident this year, and has done much harm to both Apple and Pear trees. One of its habits has been overlooked in this country, and hence treatment is usually only temporarily successful.

The woolly aphis differs from all other fruit aphides in that it has no cornicles or honey tubes, and does not secrete that copious flow of sticky matter which is so detrimental to the foliage and fruit.

We rarely find the woolly aphis on the leaves, as we do other Apple aphides; its main object of attack is the wood, both old and young. Its punctures produce swellings on the young wood, which split, and which in time give rise to large distorted areas very similar to those produced by the canker fungus. In these deformed growths the insect may go on breeding all the year.

One does not observe the aphis on the young wood during the cold part of the year. Is it that they move down to shelter, or is this downward movement connected with their migratory habit earthwards?

Many of the woolly aphides may remain on the trunk and boughs during the winter in the active state.

To ensure the continuity of the species, a few eggs are laid always close to the ground. An oviparous female deposits but a single egg, and her dried skin forms a shelter over it. This egg hatches out in the spring.

Not only does this plant-louse winter on the trunk of the Apple, but frequently on the roots, there giving rise to a subterranean race which works upon the roots in exactly the same way as the aerial form does

upon the trunk and twigs. Moreover, there is an active migration from roots to trunk and *vice versa* in the summer and autumn, some remaining above ground, some beneath all the year. We thus see that any treatment we adopt must include both races, or else it will be of only partial success.

Treatment.—This is best carried out in the autumn after the crop is picked, when a good spraying with strong soft-soap solution will soon destroy the lice. This should be applied to trunk and boughs with rather more than usual force, so as to remove the woolly covering which protects the insects.

For summer use, quassia and soft soap may be employed.

The treatment of the aerial form is of little value unless we attack the ground form also, which can only be done in this country by the injection of bisulphide of carbon into the soil. A moderate-sized tree requires one fluid ounce, half of which should be placed about 6 inches under the soil on each side of the trunk about 2 feet away from it. Great care should be taken not to make the hole, into which the carbon is poured, too near a root, as actual contact is injurious. The hole should be rapidly closed with clay, so that the fumes all spread out slowly through the soil.

Lastly I must refer to two varieties of Apple which continue proof against the attack in Australia, viz. the Northern Spy and the Majetin, which are largely used in that country for stocks.

Other Aphides.—For practical purposes we may place all other orchard aphides under one category, as they affect all fruit trees. We have them smothering Apples, Plums, Cherries, Currants, and Gooseberries. The Pear is, perhaps, least subject to their attack.

With aphides we have several well-known yet unexplained phenomena: for instance, their strange and sudden appearance, and disappearance. This is partly due to their migratory habits, many kinds living on two different plants during their life-cycle.

Many of our worst fruit aphides curl up leaves to such an extent that no insecticide will reach them. Such we see in the Plum Aphis (*Hyalopterus pruni*) and two of our Apple Aphides, and in those which attack Currants and Gooseberries. Aphides which are freely exposed, such as the Mealy Plum Aphis and the Stem Apple Aphis (*Aphis fitchii*), can be destroyed at any time by soft-soap washes, but leaf-curlers are protected during the greater part of their life. When are the Plum and Apple leaf-curlers freely exposed, so that we can attack them by a contact wash?

They are quite unprotected in the early spring and autumn. If we examine the prunes carefully in March we shall find situated in the axils of the buds a dull purplish, fat aphis—the mother queen of the Plum Aphis (*Aphis pruni*), the parent that will give rise to hordes of young that will curl the leaves later on in the year. Thus if we spray our Plums early we can prevent the Plum Aphis, and, moreover, we kill the Hop Aphis (*Phorodon humuli* variety) before it migrates to the Hops as the so-called “Fly.”

But with regard to the aphides of the Apple it is different, for the eggs of the three species do not all hatch out at once, and as two at least (*A. pomi* and *A. sorbi*) at once commence to curl leaves and get into shelter, washing is only partly successful. One species, *A. fitchii*, alone is

freely exposed in the spring. In the autumn, however, it is different, for all three of the plant lice, like those on other fruit trees, are exposed on the under sides of the leaves and shoots. These are the sexual forms which deposit eggs in October and November. This is the time when we can do most good by spraying, and so prevent the trees from being attacked in the following year.

By this autumnal spraying we can kill aphids, apple-sucker, and mussel scale all at once, and at this time we can use a strong paraffin emulsion, as the leaves cannot then be harmed and at no other time can we cope with them collectively.

The Winter Moth.—There are many leaf-eating caterpillars on fruit trees which are destructive, but undoubtedly the worst is the winter moth (*Cheimatobia brumata*). The life-history of this pest is too well known to refer to here; it is now well recognised that we can prevent winter moth attack by "grease-banding." Where the winter moth is the chief culprit, spraying should not be necessary if we adopt that process.

One has, however, frequent complaints that grease-banding is not effectual. I venture to think that if the caterpillars are examined the majority will be found to be other than winter moth larvæ; there are several small moths known as Tortrices which feed in their caterpillar stage on foliage, blossom, and buds. These Tortrices have winged females; and against this pest grease-banding is of no avail. The only remedy we have for these insects is spraying with arsenites.

Where we have numbers of these insects is it worth while to grease-band? for the same spray will kill tortrix and winter moth alike. In both cases the spray must be put on at the right time, before the larvæ can enter buds or spin up leaves and blossom tufts.

An early spraying just as the buds are bursting will do more good than later, when we see the damage being done. Young larvæ are much more easily killed than old ones, even when the latter are freely exposed on the leaves.

Winter moth and Tortrix caterpillars hatch out from the middle of March to the middle of April according to the season and locality, so that between these dates should be the time to spray for these pests.

Arsenites.—The form of arsenic chiefly used in this country is Paris green. Reports concerning its efficacy are very varied. I have known people resort to jarring the larvæ off nuts owing to the failure of this poison. Failures are usually due to the fact that Paris green has but slight adhesive power and is at once washed off by showers. Moreover, Paris green is seldom used without some damage being done to the foliage, often to a serious extent.

However, we have an arsenical spray—arsenate of lead—which, so far as I know, has not been found to harm foliage or blossom in the least, even at a much greater strength than is required to kill the larvæ. It has two other advantages—namely, a greater killing power, and its much more adhesive nature than any other arsenite we know of. It will be interesting to hear the results growers have obtained with this wash which I have found so much more efficacious than Paris green.

The Codling Moth.—The codling moth is another pest that calls for special comment. There is only one fresh thing that we want to find

concerning its natural history, and that is how many broods occur here in a year. We know in America that as we pass from Canada to the Southern States they vary from one to five; but we have no definite records here. That we have two broods I am fully convinced, for we frequently find quite small maggots in the apples in September, whilst the first appearance of the moth is in June. The first brood goes on appearing over a period of six weeks, hence we only get partial success by spraying.

By November we know the maggots have all entered their winter quarters, where they will remain until they enter the pupal stage in the spring. This pest may be coped with by trapping just as successfully as the winter moth. This is done by tying strips of sacking or haybands around the trees in July, about a foot from the ground, leaving them on until the winter, when they may be removed and burnt with the cocoons and larvæ that are found in the folds where they have gone for shelter to form their cocoons.

We frequently find the cocoons in the pieces of sacking used when the young trees are tied to stakes. A young plantation may be kept clean by examining these traps in the winter and killing the insects beneath in any way one thinks best.

A small percentage of maggots are found in the branches working downwards from the apples, not upwards, as when the apples or larvæ fall to the ground. I do not see how we can trap them, so that we must combine spraying with this trapping. I need scarcely remark here that spraying must be done soon after the blossom falls to be effectual; ten days is the limit after the blossom has fallen. The poison then lodges in the eye, the calyx closes over and protects it from rain.

Exactly how long the arsenic remains effective is not known. That it does much good we know from results obtained here and in America. For this purpose arsenate of lead has been found much more effective than Paris green. With banding and spraying one can quite well control this pest, given normal conditions. But have we normal conditions? I think not. What is the use of adopting remedies and preventives if we go on introducing swarms of these insects into the country from abroad?

American, Canadian, Portuguese and other Apples are sent over to this country which swarm with codling maggots. One can often find hundreds on the lids and bottoms of barrels when they are opened. These get distributed all over the country. I have found them in village stores in close proximity to Apple orchards, and as long as this goes on I feel it hopeless to advise any remedial measures.

No other country would allow such things to happen. Only last year numerous cases of Apples (Portuguese) were destroyed in Natal and elsewhere owing to their being infested with this maggot. A few confiscated cargoes here would soon stop the importation of what is often refuse fruit not fit for sale in the countries from which it comes.

Apple-blossom Weevil.—The Apple-blossom Weevil is not of such wide distribution as those insects I have already mentioned, but here and there it is most annoying. At present we know of no remedy which we can apply to this pest. I bring it forward more with the idea of eliciting growers' experiences on certain points.

It has been said that grease-banding will prevent this attack—that the beetles crawl the trees and so are caught. It would be interesting to hear if these weevils have been seen in any numbers on any grease-bands that have been left on the trees. I have frequently tried to catch them this way, but have not been fortunate enough to do so, nor can I see how one may expect such results. The beetles are winged and are active fliers after leaving their winter quarters. It is only when egg-laying that the females become sluggish and seldom fly, not when they come from under rough bark and other winter shelter.

At present I see no means of coping with the pest except by jarring the beetles off on a still day, preferably with a S.W. wind, and keeping the trees clean by winter washing.

Currant Sawfly.—Gooseberries and Currants are too often defoliated by the larvæ of the Sawfly, which has been more than usually plentiful this year. There have been no less than four broods.

The sawfly first appears in April, and this first brood spreads over some four weeks, so that we find mature and quite small grubs at the same time; from then we get a succession of broods right through until October, as we have seen this year (1905).

As with most sawflies, we find they winter as larvæ beneath the bushes, and it is then probable that prong-hoeing the soil several times would do some good, but there is no true panacea except complete removal of the surface soil from beneath the bushes in winter.

Probably our best plan is to handpick the bushes early in the year, and so destroy the first brood; but if this is done we must repeat the operation every now and again, over at least four weeks from the time we find them appearing.

It has been suggested that killing the late brood that appears now would do all that is necessary. I do not think so, for the reason that not nearly all the last generation have hatched out from the ground, but remain as larvæ in the soil, being joined by those we see late in the autumn.

Of insecticides undoubtedly hellebore wash is best to apply for this pest.

It would certainly pay to remove the soil in winter from beneath bushes that have been badly infested and bury it, filling in the ground with the fresh earth.

VEGETAL *versus* MINERAL INSECTICIDES.

The great drawback to many insecticides is not only the uncertainty of their action, but the actual harm they do to the trees. Paraffin and petroleum are excellent insecticides, but one cannot foretell what disaster may follow their use even upon wood, much less on foliage. An ordinary paraffin emulsion applied in the most approved manner always has an effect on foliage that is far from good. In fact, as an insecticide for aphides it should be discarded entirely on vigorous foliage; soft soap alone is sufficient to kill, so that it is not necessary.

For scale, undoubtedly mineral oils are essential. The use of crude petroleum has been recommended, but we know with what disastrous results in America, even on dormant wood.

It is the same with caustic washes and with most arsenites, and even delicate foliage is injured by soft soap.

During the past season I have tried against these the effects of vegetal insecticides, and have found that at almost any strength delicate plants are not affected by them.

There are three well-known vegetal insecticides : tobacco, hellebore, and pyrethrum. Both hellebore and pyrethrum are known poisons for mandibulate insects, and I have recently found that excellent results can be obtained with tobacco wash.

The subject of these vegetal washes is one that I think growers and others might well pay some attention to. There is no doubt that waste tobacco can be obtained very cheaply, and its importation free of duty for such purposes would, no doubt, be sanctioned. It certainly is a most effective general insect-killer, and has the advantage of being quite harmless to vegetation.

Since these remarks were made I have tried vegetal oils for scale insects at Mr. Bunyard's suggestion, and find the results most satisfactory ; the cost, however, prohibits their use except for special purposes.—F. V. T.

APPENDIX.

The following washes have been referred to in this paper :

Lime, Salt, and Sulphur Wash.

Quicklime	7 lbs.	a. Boil half lime with sulphur in 3 galls.
Sulphur	3 lbs.	of water, 1 hour.
Salt	3 lbs.	b. Rest of lime and salt, add a to b, and
Water	10 galls.	then add the rest of the water.

Arsenate of Lead Wash.

Acetate of lead	2 $\frac{3}{4}$ ozs.
Arsenate of soda	1 oz.
Water	10 galls.
Treacle	1 lb.

Hellebore Wash.

Hellebore	2 $\frac{1}{2}$ lbs.
Water	10 galls.

Caustic Wash.

Soda carbonate (98 p.c.)	3 lbs.
Potash carbonate (98 p.c.)	1 lb.
Soft soap	3 lbs.
Water	10 galls.

Tobacco Wash.

Tobacco	2 lbs.
Water	10 galls.

Pyrethrum Wash.

Pyrethrum	2 lbs.	Infuse the pyrethrum for 3 hours and
Water	10 galls.	add the water to it warm.

Mr. F. SMITH (Loddington, Maidstone) : I have ceased to band trees for the destruction of winter moth, except in the case of large orchard

trees, finding it much better to wash anything within reach, as many caterpillars beside the winter moth infest Apple trees.

Having had much damage done by *Paris green* and *London purple*, in very hot dry weather, by Mr. Theobald's advice I have used an *arsenate of lead* wash this season and found it very effectual. It thoroughly cleared Apple and Nut trees of all caterpillars, without any damage to the foliage.

The caterpillars of the small *Ermine Moth* are best destroyed by hand-picking off small trees, or they may be treated with the lead wash. They sometimes do much mischief if not removed.

Lead Arsenate Wash.

Acetate of lead	27 ozs.	} to 100 gallons of water.
Arsenate of soda	10 ozs.	

The Apple-sucker.—One of the first enemies of the Apple in the spring is the *Apple-sucker* or *Chermes*. The eggs may be seen on the shoots and round the joints and buds of Apple trees in the winter, and if prevalent, should be looked after very sharply in the spring, about the time the buds are beginning to swell. The larvæ, as soon as they are hatched, make for the blossom buds, and may be seen on the buds just before they open, and they are then easily killed by paraffin emulsion, soft soap and quassia, or any other strong insecticide. The dose should be repeated after a few days, as the eggs hatch at different periods, some being placed in a warmer position than others on the tree. The Chermes, after they are *full-grown* and have wings, are very difficult to kill, and they soon migrate to other varieties of trees and cannot be dealt with. I have not found any benefit from *winter washes*, of caustic soda, &c., only a very small percentage of eggs being killed. Other remedies had to be used in spring.

Aphides.—I have found on Apple trees in the early spring many large specimens of the *Apple Aphis*, which appear to have hibernated, or lived through the winter, and they are very difficult to kill, requiring a stronger mixture than the ordinary Aphis. It is very necessary to destroy them *before the blossom buds open*, as, like the Chermes, they get deep down in the buds, and then it becomes very difficult to get any mixture to touch them, and of course they multiply rapidly.

Wash : Soft soap, paraffin, and quassia.

Black Rot or Fungus.—This has been very troublesome in many plantations during the last few years. It attacks the leaf and fruit, and appears to feed on the cells of the outer rind, sending little rods into them, and extracting all the nutriment contained in the skin of the fruit or leaf. Then a black spot appears, and as there is no more circulation of sap in that part it cracks and shrivels, and gives that miserable appearance to the fruit which most of us know only too well.

I think the best *remedy* is a winter dressing of *sulphate of copper* (Bordeaux mixture) as follows :

Copper sulphate	6 lbs.
Lime	4 lbs.
Water	22 galls.

This should be followed by a *spring* dressing of Bordeaux mixture as soon as the blossom has dropped off.

I have found great benefit this season from having used the sulphate ; the trees that were dressed had very superior fruit and foliage to those left undressed.

In using the winter solution it is necessary to wet all the branches of the tree, or some of the spores of the fungus will grow and quickly spread over the young foliage in the spring.

White Mildew.—Last year many Apples were attacked by a white mildew which covered the fruit and looked like a beautiful bloom ; but on applying your nose or a microscope to it you at once discovered its true nature. Fruit stored with this mildew on it would not keep any length of time.

Flowers of sulphur put on with a knapsack blower seems the best remedy.

Mussel Scale and Oyster Scale.—Mussel scale is the cause of much damage to many of our orchards. It gives the trees a stunted and miserable appearance. I think the only time to check or kill this scale is when the young have left the parent scale in the *spring*. I have also found Strawson's *Vaporite* very successful. I mixed it with grafting clay and used it as a thick mixture, putting it on with a whitewash brush so as to form a thick coating over the affected part of the tree.

For *Oyster Scale*—on Gooseberry, Plum, and Nut trees—I have found McDougall's wash the most effective remedy.

Red Spider.—Gooseberry trees often look yellow or reddish-yellow when the buds are bursting in the spring, and if examined closely on a sunny day they will be found to be covered with red spider, which have been dormant during the winter. This is the time to kill them ; it is so much easier to syringe the tree effectually before the leaf is out, when some will be on the under side of the leaves and some on the upper. A sunny day should be chosen.

Liver of sulphur	4 lbs.
Soft soap	4 lbs.
Water	100 galls.

For red spider on Apple trees this wash should be reduced to :

Liver of sulphur	1½ lb.
Soft soap	4 lbs.

The stronger wash will damage the leaves.

Gooseberry Caterpillar.—This is a very well-known pest and should be destroyed as soon as it is noticed, for if the first attack is not dealt with, because there are only a few, the caterpillars will quickly run their course and come again as *sawflies* in about three weeks. In this way you get a very bad attack when perhaps you are too busy to attend to it.

Hellebore powder is the best remedy, put on with a knapsack blower. The operator should not inhale it, or it will make his nose bleed. I often see hellebore powder recommended for killing other caterpillars, but it will not hurt anything but the Gooseberry caterpillar.

Birds.—All the tit tribe, woodpeckers, wrens, tree creepers, &c., live principally on insects and their eggs, and should be sacred to the fruit-grower.

Some of them, the tits especially, do much mischief among the Pears and later Apples by pecking the fruit round the stalk. This may be prevented in great measure by planting *Sunflowers* in sufficient quantity where they are likely to be most troublesome, as they will live on the seed of the Sunflower in preference to fruit.

I think birds are often credited with being of more use than they are. We do not take into consideration the amount of mischief they do in killing off the ladybirds and their larvæ and various other enemies of the aphids, &c. I placed a quantity of "niggers" (the grubs of the ladybirds) on a pole of hops and watched with a field-glass. I saw them take every one in ten minutes after being placed there. Chaffinches, also, will eat the ladybirds and their larvæ in preference to other insects.

In Belgium and France, where there are practically no birds, the crops seem to suffer less from insect pests than ours do. In bicycling several hundred miles through Normandy and Brittany I only saw about a dozen sparrows, and did not see a crop suffering from insect pests, except some apple trees which were attacked by the caterpillars of the small ermine moth, and these the birds would not eat in any case.

We must not trust to the birds to help us.

Mr. GEO. MASSEE, F.L.S., V.M.H. (Kew): Would it not be very nice if we could do without spraying? So far as fungi are concerned probably we could, but that rests entirely with ourselves. I have some knowledge as to what many growers do. They are often careless in the application of preventive measures, no benefit consequently appears, and then they say the method is of no service. If you do your best in adopting preventive methods you benefit. The story that fungus spores are carried for thousands of miles by wind has not been proved, and it is now discredited. Assume you are troubled with apple or pear scab, diseases too well known to every grower. The diseased fruit falls, and you think the trees are absolutely free from disease. Quite so, but remember many fallen apples have the fungus on them. They are too frequently allowed to lie there; they rot and decay, yet the fungus does not suffer, but, on the other hand, benefits by this decay. The fungus spores from these decayed apples infect the tree the following season. If the diseased fruit had been collected and deeply buried or burned, this infection could not have occurred. Most people think that scab first appears on the fruit. This is a mistake; the fungus first grows on the leaves and from thence spores are washed by rain on to the young fruit. Many similar fruit diseases develop first on the leaves.

After an epidemic of fungus disease, spores lodge in crevices in the bark, on the surrounding ground, and in fact on anything and everything in the neighbourhood. Under these circumstances—that is, when, owing to negligence, a fungus has been allowed to gain a firm foothold—spraying is of service if applied in a proper manner. During the winter, before the buds begin to expand, the trees and surrounding ground should be thoroughly drenched with a solution of sulphate of iron. When the leaves begin to unfold, spray with a dilute solution of Bordeaux mixture. This may be repeated at intervals. This spraying should be done in anticipation; do not wait until the disease again appears. The well-known shot-hole fungus requires a similar line of treatment. The

various mildews, being wholly superficial, can be held in check by spraying if applied sufficiently early.

In all instances it must be remembered that spraying acts only as a preventive. It never cures. The one object of spraying is to deposit some substance on the leaves that kills all fungus spores alighting thereon. By such means an epidemic or serious outbreak of disease can be prevented. In theory every portion of the foliage, both surfaces and young shoots, are supposed to be coated with the substance used. In practice the theoretical idea does not work out. If the spray is rather coarse, the liquid runs into drops and trickles off the surface of a polished leaf. If the leaf is covered with matted down or hair, the solution cannot displace the entangled air, and the surface of the leaf remains dry. If the spray could be made to resemble a London fog it would wet every portion of a plant, and the plants need not be directly sprayed at; but no machine at present in existence will give this ideal condition of things, at least not out of doors. In the end we are compelled to return to the old but nevertheless certain method of preventing an epidemic: that is, cleanliness. Where good cultivation is practised, where every symptom of disease is nipped in the bud, and where all diseased material is promptly removed and destroyed, epidemics of fungus disease do not prevail.

A little time devoted to the broad features of fungi as a group of plants would repay the cultivator. When an acorn is planted, the first product is an oak tree in miniature. With many of our most injurious fungi this is not so; the parasite first appears on a given kind of plant under a particular form. The spores produced by this form are carried by wind or insects to a different kind of plant, where the fungus completes its growth under a form totally different from that of its first condition. The knowledge that these two forms are conditions of the same fungus is very important from an economic point of view.

Fungi are very abundant on the leaves of nursery stock, where they form reddish patches or minute holes that cause the leaves to fall early in the season. At any one given time such an attack appears to be a trivial matter, but if this happens two or three years in succession, as it certainly will if not promptly attended to, the wood is not matured, grafting becomes a difficult matter, and the injury sustained is never eliminated.

Of late years much has been attempted, and a little accomplished, in the matter of producing races of plants immune to their most dangerous fungus pest. Probably greater success awaits investigation in this direction. One point in this connection appears to have generally been overlooked; that is the fact that fungi are very elastic in their mode of life, and are ever ready to adapt themselves to circumstances; in fact we have evidence that something of the kind is already at work. It is a well-known fact that a plant immune against a given fungus in one district often falls a prey to the same kind of fungus when removed to a new district.

Mr. BUNYARD: What about the silver leaf?

Mr. MASSEE: I know absolutely nothing about the silver leaf. I have tried for years and years to find a remedy, but I have not succeeded.

Some think it is due to lack of food in the soil, but not always. I can produce silver leaf.

Mr. BUNYARD : By inoculation ?

Mr. MASSEE : No, but by planting fruit trees close to the drain from a stable.

Mr. BUNYARD : That does not look like lack of nutriment.

Mr. MASSEE : No.

Mr. BUNYARD : It would rather seem to be the effect of overfeeding.

Mr. MASSEE : White root-rot is often an exceedingly common and unsuspected source of danger. When a premature yellowing of the foliage is observed, expose the root and see whether you can detect the presence of a white mildew on the root or in the soil. If the white fungus is found under the bark of the root and at the collar, attempting a cure is hopeless. If the attack is only slight and superficial, procure a supply of boiling water and throw it on the roots and surrounding soil. No harm is done to the tree, as the temperature of the water is lowered before it injures the roots, but it will kill the fungus. Mix the soil on replacing with a sprinkling of quicklime and powdered sulphur.

Mr. CECIL WARBURTON, M.A. (Zoologist to the Royal Agricultural Society) : If there is to be any discussion on the many interesting points already raised, I must cut my remarks very short indeed. Mr. Theobald said he was thankful I was to deal with the Black Currant Gall mite, thereby no doubt implying that there was little satisfactory to say about it. I think, however, the time has come when a summing up of our knowledge with regard to it may be useful. The mites live for the most part inside the buds. They are extremely small, about one-hundredth of an inch long and very much narrower, so that it is not very astonishing that we have made such slow progress in finding out how they live ; but our knowledge of their life-history is at length fairly complete. Eggs are laid during every month of the year, and the mites go on increasing until one of two things happens. Either they have not done a great deal of harm, in which case the infested bud is not prevented from developing, or they have eventually killed the bud, in which case it dries up and the mites leave because they have no longer a suitable place to live in. They leave the developing buds and, having nowhere to go, perish. Later they leave the buds which are dried up and they go into the new buds. I believe that those which survive are entirely in the new buds. Our experience as to the effect of treatment is extremely irregular. You may use the most drastic measures sometimes and yet you have the mite recur. On the other hand, you may use mild measures and almost appear to succeed. One gap in our knowledge is as to what becomes of those mites which do not gain access to the new buds. Do they go down into the ground or do they lurk in the lower portions of the bushes ? And here is our difficulty. I have not been able to find, and no one else has been able to find, these mites living in the soil. I have not been, and no one else has been, able to find these mites living low down on the stems of the bushes. Yet it is perfectly certain that one or the other of these things takes place. Otherwise you cannot account for the fact that you sometimes cut bushes down to the ground and the mite will reappear. Two considerations lead me to believe that it is always in the

bush somewhere or other, and that it is never in the ground that the mite remains hidden. Samples of the soil have been searched to find the living mites, but without success. I do not attach any great importance to this fact, but anyhow no one has been able to find them; if these creatures in the course of their life-history fall to the ground and stay there, it really cannot be explained why you can never find them behaving as though they were happy there. When watched under the microscope in soil, they do not conceal themselves, or lay eggs, but wander restlessly about until they die. It is certain, if your tree does not thrive, you have not entirely removed the animal. Is it astonishing you cannot do it? In cases of very severe attack it is very little use trying anything at all. If these investigations are worth anything, they ought to save the expense of trying to save plants which are obviously bound to fail. What, then, are we to do? My belief is that salvation lies only in the determination to plant none but mite-free plants. My treatment is to pay every attention to those plots of Black Currants which have not been attacked. There are still places left which have been lucky enough to escape attack, and the only hope is to get stock from them free from the mite. I have had to condemn plantations where you could not see a single big bud.

With young plants it is quite different from dealing with old bushes. You cannot by simple inspection make sure they are free from the pest. It needs the most careful examination, because you have to bear in mind that a single mite inside a bud is quite sufficient to set up an attack! About the end of June there are hardly any mites in existence in this country. Those only are alive which are in the buds. I have tried much safer methods than the examination of individual buds. I have taken the suspected buds, chopped them up, and placed them in a phial of spirits of wine. I have shaken the phial, and then allowed the débris to fall to the bottom; this I have examined under the microscope and by a careful search I have found perhaps three or four mites—sufficient to show that the buds are not immune. The recognition of the mite is by no means a simple matter, and I impress upon you, do not be content when a nurseryman, in perfect *bona fides*, tells you that a plant is free from attack. He cannot tell. He may, without knowing it, be supplying you with diseased plants! You must get expert advice, or at least make sure that the stock from which the cuttings are taken is free from "big bud."

Three or four years ago I was in Ireland, in the fruit-growing district of Armagh. I wish I had been there two years earlier, as I could have saved quite a disaster. There had been in that fruit-growing district a very great boom in fruit-growing. The people had begun to enlarge their fruit gardens and the Black Currants were much in demand. A great many more were wanted than could be supplied, and bushes were imported from England and Scotland. In these there were mites. I talked to the fruit-growers in Armagh, and I hope my words put them on their guard, and that they are still preserving considerable areas free from attack. They know their danger. I am afraid the time has gone by to be of much use in this country—the pest has spread so terribly—but even small plantations are worth fostering.

The Pear Midge.—Then there is the Pear midge. This has been very much neglected in the early days. People paid no attention to it. It is gradually encroaching and bids fair, if care is not taken, to become as trying a pest as the Black Currant mite. We should learn a lesson from that dreadful pest. You find stunted Pears containing grubs, like cheese-maggots, on a tree. You pay no attention to them, perhaps you do not even know of it. What I would impress upon you is, do not be content not to know whether you have this pest or not, but be on the look-out for it, and if you find a single tree attacked, adopt the most drastic measures to get rid of it. They come out and you have no excuse for not taking measures against them. If I had a tree infested, I should strip every pear off the tree, good or bad, and dress the ground.

Question: What dressing will destroy the Pear midge grub when it has descended to the ground?

Mr. WARBURTON: Kainit is what the Americans use.

Question: Does that succeed?

Mr. WARBURTON: They say it does.

Question: Have you tried it?

Mr. WARBURTON: I have tried it, and it has been generally but not always successful.

Mr. HEMSLEY: I have recently gone through two nurseries where the Black Currants are beautiful. Would it be safe to assume that they are free from infection?

Mr. WARBURTON: I should want to know from what plants they were cut. If the parents were infested, it is almost certain that the offspring would be. Their own apparent healthfulness does not count.

Mr. W. P. WRIGHT: I have a number of Black Currants sent to me by Mr. Bunyard some four years ago; they are the finest Black Currants in existence at the present time. It is a magnificent variety, the Boskoop Giant.

Mr. BUNYARD: It is twelve or fourteen years ago since I introduced this variety. It is of extraordinary vigour. We have found it practically free from the mite, I will not say absolutely free from it, because I have a few affected plants that we first imported, which are not as vigorous as they might be. We can only say the Boskoop is a very strong grower, much more woody than any other kind, and it may be that the cuticle of the bud is harder and less easy for the mite to penetrate. I was in a private garden at Oxford one day, and I said to the gardener: "Do you know the Black Currant mite?" He said: "I have none here." I went through his plantation of currants, and I never saw such fine bushes before. I said: "You have got it most decidedly," but on the Naples variety only the old Blacks are quite free.

As to the mussel scale, you must get rid of it, you must search every stem, and will find most on the weakly trees. One of the safest things to use for mussel scale is common oil, whether animal or vegetable. I believe scientists say that the scale breathes through spiracles or pores, and you stifle them by covering up these with oil. This scale is very much more prevalent than people are aware of.

The black aphid is more difficult to kill than any other. It appears to

hibernate in the ground during the winter, and therefore, during the early spring season while the leaves are quite green and young, we send a woman round to pick off the leaves up to about two feet high and burn them. In that manner we have, to a great extent, been able to master the black aphid on Cherries.

It wants a lot of killing. Sometimes we have to repeat the operation, and it is not unusual for it to destroy the leading shoots, but we must attack it to keep it down. Then a word as to the wonderful appearance and disappearance of the aphid. We had an instance where some thousands of trees were suddenly and completely covered with the green aphid. I was away from the nursery for three days, and when I returned I found they had all disappeared. The only reason we could suggest at the time was that we had a "cold snap" in the middle of the summer, and they must have been killed by the low temperature. Perhaps the scientific gentlemen here present may help us to combat these pests. 1904 was a bad year for them, but this year was the reverse.

It is not unusual for young Plum trees to be affected by white lice, like aphides, which live on the under side of the leaf. If we can get rid of these in the autumn we are to a certain extent immune the following year. As to the Pear midge we had a plantation of old trees bought for experimental purposes, and there we first discovered it. By taking off the lower branches, and giving a heavy dressing of kainit, we have been able to cure them to some extent. I would advise everyone to treat this pest as we do the Gooseberry caterpillar: take off the surface of the soil for about seven inches and burn it. By that means you will kill a large number of the larvæ. We rely upon methylated spirit, and use almost exclusively vegetable substances, such as extract of quassia mixed with soft soap, as insecticides. We do not use any of the nostrums advertised so largely.

Mr. PAGE said carbolic soft soap mixed with water will kill caterpillars, and basic slag will cure silver leaf. Pear midge can be killed with bone meal, sulphate of iron, kainit, and superphosphate. I have not had the Black Currant mite since I used carbolic soft soap.

Mr. SPENCER PICKERING: We use pure paraffin, and we practically destroy the whole of the eggs. But we have used paraffin on neighbouring trees with different results, due no doubt to accidental circumstances. Professor Theobald made some very valuable suggestions as to the use of vegetable poisons in preference to mineral poisons. That idea has occurred to myself, though I believe that neither of us is the first to whom it has occurred. I have been investigating this year, but started too late to make very much progress. I have used different poisons of an alkaloid nature, and the results are very promising. At the same time they are hardly sufficiently advanced to enable me to say much about them.

Question: Is there any hope in the future of our being able to keep the fungi in check?

Mr. PICKERING: I think there is every hope, judging from what we have done.

SECOND DAY, OCTOBER 11, 1905 (Afternoon Conference).

Subject—

“LAND TENURE AND RATING DIFFICULTIES.”

*Chairman—*ARTHUR S. T. GRIFFITH-BOSCAWEN, Esq., M.P.

IN opening the proceedings the CHAIRMAN said : The branch of the subject, or rather I should say the branches of the subject—because the question of Land Tenure and the question of Rating are two distinct questions—the two branches we are discussing this afternoon might appear somewhat dry and dull after the most interesting discussion which I had the pleasure of hearing this morning, and the very interesting discussion which I am informed you had yesterday afternoon. But they are both very important questions for the future development of our industry, and therefore they are questions which we ought to consider, and upon which we ought to try to come to some right conclusions. I am one of those—and I gained my experience from the fact that it was my privilege to preside over the Government Committee last year—I am one of those who believe that a great and further expansion in our fruit-growing industry is possible. I think that for two reasons. I think the public demand for fruit is a growing one, and I hope that it is ; and secondly I believe that if certain difficulties and drawbacks, which the grower in this country has to encounter at the present time, were removed, we might produce in this country a great deal of the fruit which now has to be imported from abroad. But if there is to be an expansion of the industry two conditions are certainly necessary. In the first place we must be able to obtain the land that we require for the purpose of fruit growing, and in the second place we must take care that the occupiers of such land are not unfairly treated in the way of taxation, whether it be imperial taxation or local taxation, but that they are placed upon a footing of equality with the occupiers of land used for other purposes. For that reason therefore, if we are to have any expansion of the industry, as I firmly believe we shall have, the solution of these two questions is most important.

Well, now, dealing for a very few moments with the first question, the question of land tenure, the matter is undoubtedly an exceedingly difficult one. It must be remembered that land under fruit, especially land where fruit is cultivated and where there has been a great expenditure of capital, that land is in a different position from that used for ordinary farming. In the case of ordinary farming in this country a great many of the improvements are permanent improvements and are made by the landlord. In the case of the fruit-grower it is quite different : the improvements due to the planting of fruit trees are in most cases entirely done by the tenants, and the value of the land might be trebled, or quadrupled, or even multiplied five times. No improvements which the fruit-grower can make can be described as absolutely permanent, though they are often of a lasting kind, so that where you have the case of landlord and tenant it is easy enough to see that a great part of the value of the land under fruit is entirely made by the tenants, and the real difficulty is that we

have to so adjust the questions of landlord and tenant, that the tenant is made secure in his own improvement, and that at the same time the terms are not so onerous to the landlord that he will be unwilling to let his land for the cultivation of fruit. I do not doubt myself, and I think it was always the view of the Committee over which I had the honour to preside, that the ideal system of fruit cultivation is ownership. If every fruit-grower was the owner of his land we should not have our present great difficulties, and the Committee unanimously recommended that if anything could be done in the way of encouraging the purchase of small holdings by legislation or otherwise it would be most desirable. But we cannot expect that system to prevail generally, although in some cases it does prevail and to great advantage. I need only mention the Wisbech district of Cambridgeshire, where there has been a most remarkable expansion of fruit-growing, secured largely by the fact that the growers have been able to purchase their holdings. But we cannot expect that to prevail everywhere, and so we ought to try to secure that, in the case of tenancies, those tenancies should be fair to both parties.

Now we have to meet a great many difficulties. In the first place, the law on this matter is a particularly obscure law. I am bound to say that neither the landlords, tenants, nor some of the land agents who gave evidence before us seemed to know at all what the law really was. In the next place we find that the law is made up of the Agricultural Holdings Acts, modified in the case of market gardens, which apparently can be made to include every kind of plantation, by the Market Gardeners' Compensation Act, which secures to the tenant full compensation for what he has expended on the plantation on the determination of the tenancy. The object of the law was to do justice to the tenant. But the operation of that law has been most deterrent to landowners, who fear that they may be called upon, on a sudden termination of the tenancy, to find a very large sum of money for the fruit trees upon the land, which they can neither work at a profit nor find another tenant to take over. The Parliamentary Committee considered that that had a deterrent effect upon the letting of the land, and therefore upon the expansion of the industry. It would not do for me, as chairman, to enter fully into the question, but I think myself we must try to find some mitigation of the present operation of the law. The Committee over which I presided made one or two suggestions. We felt that the real difficulty was the question of valuation. It was said by some that when a tenancy came to an end the compensation was to be determined by what was the value to the incoming tenant. It was said also that such large amounts were demanded that sometimes it was impossible to get an incoming tenant.

What is necessary is to take such steps as shall afford a fair valuation not merely to the outgoing tenant but to the incoming tenant. We suggested that it would be an advantage if the Board of Agriculture—or that sub-department of the Board dealing with fruit, which we should all be happy to see established—would appoint certain valuers, expert in fruit valuation, who could determine from time to time upon what particular principle and methods the valuation of fruit plantations should be carried out. We thought also that, to meet the difficulty of landowners being frequently called upon suddenly to find a very large sum of money to pay the out-

going tenant, the State should be empowered, under proper conditions, to lend the money to the landowners for the purpose of providing the necessary cash. We also thought, looking to the interests of the tenant, that the Compensation Act should be made retrospective in its operation. It appears to me that there is no doubt whatever that when Parliament passed the Market Gardeners' Compensation Act it was the intention of the Legislature that it should be retrospective, and that it should apply to all market gardens which existed before the Act passed and to all improvements which had been made in those gardens before the passing of the Act, and as a matter of fact it was so understood and for a time compensation was actually paid on that basis. But in a certain case which was taken to the House of Lords it was decided that though the Act was retrospective in the sense that it would apply to market gardens existing *before* the Act passed, it was only to apply to the case of improvements *since* the Act passed, and the result is that you have a real grievance. The man who made improvements just before the passing of the Act does not get any compensation, whereas the man living next door, who made his improvements immediately after the passing of the Act, gets full compensation. Under the Evesham system the valuation as between landlord and tenant is practically avoided altogether, the incoming tenant paying the outgoing tenant. That might be a solution of the difficulty. I do not know how far these suggestions meet the views of the meeting, but I think we shall learn a great deal from the discussion which is going to take place this afternoon, and I hope the suggestions we made and the recommendations we put forward will be adequately discussed, and that we shall have the opinions of practical men brought to bear on the discussion.

Turning to the question of Rating and Taxation—because I think in calling the subject for this afternoon Rating difficulties we are rather limiting it—there are difficulties in connection with Imperial taxation as much as there are in connection with Local Rating. We find that at the present time fruit plantations are not fairly treated. In the first place, for the purpose of income tax, an ordinary farm pays on one-third of the annual rent; that is not the case with a fruit plantation, because in the latter income tax is paid, not upon one-third of the rent, but upon the whole gross profits. We think this unfair. It used to be the case with hop gardens, but it was in that case abolished, and we think it ought to be abolished in the case of market gardens. There is no doubt, then, that directly fruit-growers plant fruit trees the local authorities are in the habit of increasing their assessments. We think that is a great grievance, because when the fruit trees are first planted, so far from the value of the land being increased, for the first few years there is not an increase in the value, and thus the industry is handicapped, and people are deterred from going into it. The Government Committee therefore suggested that in assessing fruit plantations the assessment should not be raised immediately, but that in the case of small fruit, which comes into bearing more quickly, a period of five years should elapse, in the case of mixed plantations seven years, and in the case of orchards twelve years. We thought this would meet the grievance very fairly.

Then in the case of glasshouses the assessment is very unfair. It is absurd that in the case of glasshouses, which depreciate, as everybody knows, exceedingly quickly, only the same amount of deductions should be allowed for repairs as in the case of an ordinary dwelling-house, namely one-sixth. To suppose that an ordinary dwelling-house deteriorates and wants renewing as often as a glasshouse is absurd. There can be no doubt that in the case of a glasshouse one expects a sixth or an extra something should be allowed in order to arrive at a fair value. Then in regard to local taxation glasshouses are very unfairly treated in the fact that they are not allowed to come under the provisions of the Agricultural Rates Act, but are treated as buildings. Under that Act agricultural land pays only one-half, and buildings pay the full amount. Glasshouses do not stand to the fruit plantation in the same position as an ordinary farm building does to an ordinary farm. The glasshouse is the shelter under which part of the produce is really grown, and it ought to come under the head of land instead of buildings. The Committee felt that that was another special grievance and ought to be dealt with, and we recommended that in the case of glasshouses the Agricultural Rates Act should be made to apply. I am very well aware that on both these questions a great deal of controversy is likely to be aroused. I do not suppose for a moment, especially on the question of land tenure, that we shall in any way be unanimous, but I do hope that we shall have an interesting and instructive discussion, and I believe that the right solution of these questions depends largely upon how far it may be possible to extend the industry, to the great advantage of the country generally. I have to announce that one of the gentlemen whom we had hoped to be present to-day—I mean the nominee from the Wisbech Fruit Growers' Association—is unable to be present. I will now ask Mr. Cecil Hooper to address the Conference.

MR. CECIL H. HOOPER, F.S.I.: Land tenure in relation to fruit culture is more intricate than in the case of ordinary farming, and consequently it is more difficult to arrive at justice between landlord and tenant. Previous to the passing of the Agricultural Holdings Acts and the Market Gardeners' Compensation Act, many landowners had equitable agreements and dealt justly and liberally with their tenants who had improved their land by fruit planting; others took advantage of their tenants' skill, time, and money. In order to bring the latter class of landlords to recognise their responsibility and do justice to their tenants, the Market Gardeners' Compensation Act was passed.

In former days there existed a more paternal spirit between the landowner and tenant, and between the farmer and his men, than, I fear, now generally exists. This is partly due to greater class independence, and to the severer struggle for existence.

The British farmer and fruit-grower now need to be given every just facility to make their business profitable, when produce similar to that they grow may be brought in free from any country to the same markets at which the grower sells, to the flour mill in his neighbourhood, or to the shops in his village.

There appears to be special difficulty in legislating between landlord and tenant when agriculture is concerned; lawyers seem apt to set

themselves the problem of how to defeat the object of an Act of Parliament when in favour of the agricultural tenant, instead of endeavouring to further the object of the laws passed by the rulers of the land. In this way, the object of the Market Gardeners' Compensation Act has largely been defeated, an Act which was by its originators intended to be retrospective; and still the object of the last Agricultural Holdings Act is evaded as regards market gardens. Thus it appears to be legally construed that a market-garden farm is not a "market garden," unless the lease uses the words "market garden" in reference to the farm; and although the farm may be largely planted with fruit trees and bushes, and vegetables are grown for sale on a considerable portion of it, still many lawyers state it does not come under the Market Gardeners' Compensation Act unless the words "market garden" are to be found in the lease. This interpretation seems to be in direct defiance of what was intended by the movers of and those who passed the Act; as is also the use (in reference to land which is at the present time market garden) of terms to exclude the Act, such as "it is hereby agreed and declared by and between the said parties to these presents, that the lands hereby demised shall not be deemed to be let and are not to be treated as a market garden within the meaning of the Market Gardeners' Compensation Act, 1895," or let "for agricultural purposes only," or again "under no circumstances shall this tenancy be considered as a market garden."

If a landowner does not wish fruit trees or bushes planted on his land, he certainly has a right to prohibit them being planted, but it is unjust and despicable, to want another man to plant his land with fruit, thereby to raise the value of the land for sale or rental, and yet to shelter himself from paying compensation by such a clause as one of the above, and, to add insult to injury, perhaps make the tenant pay for the cost of his lease and his landlord's counterpart.

The Market Gardeners' Compensation Act appears to work well and be properly understood in the Evesham district, but this district is almost specially favoured by soil and well-wishing landlords, and to its members of Parliament is the credit of having introduced the Bill after consultation with the growers themselves. In some other parts of the country it has caused uncertainty and friction between landlord and tenant. Let me quote one example to show some of the difficulties. About four years previous to the passing of the Market Gardeners' Compensation Act, a man proposed to take a farm. Most of the hardy fruits were being grown on this farm as well as vegetables for market; the proposing tenant was asked if he would agree to plant so many acres of fruit trees without compensation. This proposal not being accepted, the lease was drawn up excluding compensation for fruit trees and bushes. Eventually, after some three months' discussion on this and other points, the landlord not being willing to give way, yet wanting the prospective tenant, and the outgoing tenant pressing for completion, the lease was signed, it being stipulated that the incoming tenant should pay the cost of the lease, both for the landlord and himself. The bill the tenant had to pay for the lease and counterpart and the discussion of the lease by the landlord's and tenant's solicitors amounted to upwards of £50. Four years after the tenancy commenced the Market Gardeners' Compensation

Act came into force; the chief industry of the farm was then market gardening, the corn and hay being grown chiefly for the horses. Now the fourteen years' lease is nearly complete, the tenant considers the Market Gardeners' Compensation Act applies to the farm; the landlord says it does not. The tenant considers, although he has no claim for fruit planted before the Act came into force (January 1896), that he has a right to claim compensation for all fruit planted since January 1896, and that it was the intention that such a farm should come under the Act.

The question occurs as to whether an Act of Parliament overrules a lease, and whether it is necessary that the words calling such a holding a "market garden" should necessarily occur in a lease, when it can be proved that the farm has been used for fruit growing for market continuously for fully thirty years. In the above case, the rent, rates, and high wages of the district are too high for corn and sheep farming, the industry of the neighbourhood being chiefly the growth of fruits, vegetables, and flowers for market, both in the open and under glass.

Now let us look at fruit-growing from the landowners' side. If a landowner is to be subject to paying compensation for fruit trees and bushes planted, he should in fairness have a voice as to the extent of such planting, and as to whether the position and land are suitable, and he may well require to be safeguarded as to the maximum amount to be allowed per acre, or a lump sum not to exceed a certain amount, also that the land should be kept properly cultivated, and not neglected previous to the end of the lease, for if weeds get among the roots of trees and bushes they are difficult to clear out, and in doing this the plants are disturbed injuriously.

Again, particularly in a district not devoted to fruit, a landlord must consider whether subsequent tenants are likely to wish to have, and to take care of, the fruit trees and bushes planted.

There is much uncertainty in fruit growing, of which frost in blossoming time is one of the chief causes, doing special harm in valleys liable to mists, and on sites where, either due to aspect or other cause, strong sunshine comes suddenly on to the plantation. I know an orchard that last year produced 1,000 half-bushels of plums, but being on an unfavourable site and low-lying position, it was caught by the frost very severely at an exceptionally critical time of blossoming this year, and it only produced one peck of plums. Consideration has also to be given to planting suitable and good varieties of fruit, and even when this is done, we have to remember that we live in a time of rapid changes, and what may be popular and successful now may not be so in ten or twenty years' time.

In concluding this first portion on Land Tenure, I consider:

1. Every holding in cultivation as a market garden (*i.e.* growing fruit, vegetables, or flowers for market) at January 1, 1896, should, without controversy, participate in the benefits of the Market Gardeners' Compensation Act.

2. The cost of a farm lease should be either shared between landlord and tenant, or (as the stipulations in a lease are chiefly to the advantage

of the landlord in agriculture) should be borne by the landlord, and the tenant should not be made to pay all the expenses.

3. That if the family lawyer acts as a land agent, he should personally know the land he is dealing with, and be well informed on agricultural matters. I know a case in which in the proposed lease the tenant, among his many other restrictions, was prohibited from fishing, when there was not on the whole farm enough water for a frog to stretch his legs in, except in the well or water-tanks.

I also heartily agree with most of the recommendations and suggestions of the Fruit Committee of the Board of Agriculture on this subject, viz. :

I. That the various Agricultural Holdings Acts should be consolidated into one Act.

II. That the Market Gardeners' Compensation Acts be amended by making Section 4 retrospective.

III. It is further suggested that, in cases where a tenant gives notice to quit, he shall not be entitled to receive compensation unless he present to the landlord a successor who is willing to take over the holding at the same rent; that in the event of his so doing and the landlord accepting his nominee, the compensation be paid directly by the new tenant to the old tenant, but that the landlord have the right to refuse to accept the outgoing tenant's nominee, in which case he must pay compensation to the outgoing tenant under the provisions of the existing law.

IV. That the Board of Agriculture should appoint experts in fruit valuation, and shall call them together for the purpose of formulating general rules for estimating the amount of compensation to be paid to an outgoing tenant of a holding under the Agricultural Holdings Acts on the basis of the value to an incoming tenant.

V. That the State be empowered to lend money to landowners who have fruit trees on their estates, subject to suitable conditions, for the purpose of supplying the ready money required for the payment of compensation at the determination of a tenancy.

VI. That it would be to the advantage of landowners and tenants in fruit districts if, under the provisions of Section 5 of the Agricultural Holdings Act, 1883, they settled the basis of compensation by the "particular agreement" therein referred to.

VII. That a Bill should be passed facilitating the purchase of small holdings by tenants with assistance from public funds, somewhat on the lines of the measure brought in by the Right Hon. Jesse Collings, M.P., in the Session of 1904.

Now let us consider the rating of farms and "fruit land." Whilst taxes are a charge for imperial purposes, the rates are the public charge assessed on property (houses, buildings and land) for local purposes.

The principles of taxation should be that the individual should be taxed according to his ability to pay, and that everyone who benefits by the expenditure shall pay a fair premium for that benefit. The "poor rate," with all the other rates it includes, has long been recognised to fall unduly heavily on the farmer. To quote the figures given at the Central Chamber of Agriculture, whilst income tax is based on the ability to pay, and taxes capital to the value of £500,000,000, local taxes only affect £160,000,000 of capital, leaving £340,000,000 of

capital paying nothing. The incidence of local taxation needs in some way to be extended.

Land is really the raw material : it is the equivalent to the farmer of wool to the cloth manufacturer, or corn to the miller.

Farmers pay very much more Poor rate in proportion to income than merchants, professional men, manufacturers, and persons with private incomes. Mr. H. Biddell, of East Suffolk, gives the following example :—

“ A farmer farming a thousand acres of land with a rent of £1,200 a year is assessed by the Government upon one-third of his rent, that amount being estimated by the Government as the amount of his income. A farmer farming a thousand acres of land would have about £8,000 capital. The interest on that amount of capital, taken at 5 per cent., would work out at £400 a year, and that was exactly the Government estimate of what the farmer would obtain as his income from the land. He thought that it would work out that a farmer with a rental of £1,200 might be taken as having an income of £400 a year, but that farmer would have to pay rates on about £600 a year. His land would be rated at about £1,000, and his house and his buildings at a little more than £100. He would have to pay rates on half the rateable value of the land and on the house and buildings. But the manufacturer, the tradesman, or the business man, with the income of £400 a year, would, in all probability, be occupying a house at about £40 or £50 a year, and factory at about £50 or £60. In that case his total rent would be something like £120 a year, and the rateable value would be about £100 a year. A professional man with an income of £400 will probably spend about £60 on his house, and is only rated on that amount. Thus the farmer with the income of £400 a year would be rated at £600, and the manufacturer or tradesman with the same income would be rated at only £100 a year, whilst the case of the professional man afforded a still greater contrast, for he only pays on about one-eighth or one-tenth part of his income.

“ Thus with the same income, allowing for the half rates on agricultural land, the farmer would pay on £600, the manufacturer on £100, and the professional man on £60 ; or, expressed in another way, the farmer pays rates on 150 per cent. of his income, the tradesman on 25 per cent. of his income, and the professional man on 12 per cent. of his income.”

Again, looked at from another standpoint, suppose each householder spends one-sixth of his income on house-rent, the farmer is found to be rated on many times more than one-sixth of his income.

Although the prices of farm produce tend year by year to decrease and the cost of labour to increase, yet the rates on farms have increased in spite of the Agricultural Rates Act, and tend to increase year by year ; that the burden of rates on land should thus increase yearly is unjust and unfair, it is squeezing the farmer between the upper and nether millstone. Perhaps the chief benefit the farmer gets from the poor rate is the use of the roads ; but brewers, millers, and steam haulage contractors use the roads equally and with greater damage without being rated as heavily as the farmer is in proportion to profits.

Let me take one example of a farm in Kent, area 132 acres, rent £242, and notice the increase in the poor rate in the last twelve years.

	s.	d.		£	s.	d.
1893 at 3 0 in the pound per annum	3	0		23	9	2
1895 „ 3 4 „ „ „	3	4		26	1	4
1896 „ 3 6 „ „ „	3	6		27	7	4
1899 „ 3 8 „ „ „	3	8		21	16	4
1902 „ 4 0 „ „ „	4	0		23	16	0
1905 „ 5 8 „ „ „	5	8		32	17	4

This farm was in 1893 paying on a net assessment of £153 on farm, house, and yard 3s. in £1 per annum; from 1893 to 1895 the rate rose slowly from 3s. to 3s. 4d. In 1896, when the Agricultural Rates Act came into force, the rate was 3s. 6d. and has gradually risen in the subsequent 9 years to 5s. 9d. In 1897, under the re-assessment of the union the net rating was made £28 for house, £12 for buildings, £158 for land, paying full rate on house and farm buildings and half rate on land. The payment of the half rate on land by Government was hardly noticed by farmers in this district; farmers believe it was not intended that the farm buildings were thus to be separated from the land, but consider the land and farm buildings should be at the half rate. By the re-valuation of the union in 1897 mature fruit plantations are rated at £2 to £5, most at £3, per acre, arable land at about £1, the poorest at 15s., and market-garden farms at 25s. to 30s. per acre; glasshouses are rated per 1,200 square feet area at £3 5s. 0d. gross, £2 2s. 6d. net, equal to eight houses of 100 feet × 12 feet for £17. This rate, though perhaps fair when the glasshouse industry was prosperous, is too heavy now, and should be lessened if re-assessed, as should be the case every ten years, viz. in 1907.

A glasshouse 100 feet × 12 feet at present pays about £1 for Poor and Sanitary rate and Income tax under Schedule A. Farm land pays about 5s. per acre in rates.

The voluntary school rate for some ten years or more in this parish was 4d. in £1 annually, but now the county is running the schools its compulsory rate is 9d. in £1 and is now paid in the Poor rate.

The cause of the high rates is said to be that the Rural District Council does not receive nearly the equivalent of the half agricultural rate from the Government; that many houses are vacant and consequently pay no rates; that house property has depreciated and house-rents have lessened since the South African War; that roads cost more than they used to do; and that each villa, almost as soon as built, is provided with tar paving and curb to path. This is very pleasing, no doubt, to the owner of the villa, but it is rather hard to make the farmer help to pay for it.

As the worthy Secretary of the Royal Horticultural Society, in asking me to read a paper on this subject, also asked me for practical suggestions, I give the following:

1. That the Poor rate should, like the Sanitary rate, be only payable at one-quarter rate on agricultural land instead of at one half as at present.
2. That the farm buildings should be included with the agricultural land, and should not be assessed with the dwelling-house.
3. That, without disturbing existing contracts of tenancy, all rates on agricultural land should in future be borne equally by owners and

occupiers ; this was recommended by the Royal Commission on Local Taxation of 1882. The effect would be to widen the burden of the payment, give landowners greater interest that the rate should not be exorbitant, and give some one besides the farmer the opportunity to complain.

4. As at present Motor cars pay nothing towards the roads or local rates, it has been suggested by Mr. Lloyd Wharton in the House of Commons that they should be rated on a graduated scale. It was proposed at the Central Chamber of Agriculture that motors up to 10-horse power should be rated at £1 per horse power, and that for every horse power over ten the rate should be doubled. This payment would be some slight compensation for the wear of the road, the frightening of horses, making them shy and endangering the lives of the occupants of carriages (both public and private), their special danger to children and old and deaf people, their inconvenience to other travellers on the road in the way of dust and smell, besides smothering houses and hedges near the road with dust, and the fact that they often selfishly monopolise the road, driving people into the banks at the road side for safety. It is unfair that rate-payers in agricultural districts should have to pay for the pleasures of the community at large.

I also agree with the suggestions on rating of the Board of Agriculture Fruit Growers' Commission 1905, viz. :

I. That in the assessing of agricultural holdings for local rates, the assessment should not be raised by reason of the planting of fruit for a period of five years after the planting in the case of small fruit, or seven in the case of mixed plantations, and twelve years in the case of orchards, also the two recommendations in reference to income tax.

II. That the benefits of the Agricultural Rates Act of 1896 be extended to glasshouses used for commercial purposes.

III. That, in the case of glasshouses, the allowance of one-sixth, given to dwelling-houses for repairs in the assessment for income tax, be increased to one-third, by making a special allowance of one-sixth for renewal, in addition to one-sixth for repairs.

IV. That rule No. 8 for the assessment of income tax, whereby market gardens and nurseries are assessed for Schedule B according to the rules of Schedule D, be repealed so far as it applies to market gardens.

In conclusion, although farmers are said to be proverbial grumblers, I trust I have proved that hardships which should be remedied do exist both in land tenure and in the rating of land, as well in many other ways.

Unless agriculture is prosperous, capitalists will invest little, and that only sparingly, and the son of the farmer is apt either to emigrate (and farm in competition), or go into business or profession in town. The agricultural labourer has very little chance of bettering himself, and at twenty-five years old probably earns as much as at any time in his life ; very, very few are ever able to take a little farm, as is the ambition of almost every farm labourer in Canada.

It is a most serious thing, directly and indirectly, for the agriculture of the country not to be prosperous. It is for the good of the nation itself

that all unnecessary hindrances be removed, and that the farmer be given fair play in every direction.

Mr. S. H. COWPER COLES, F.S.I.: I do not wish to speak on behalf of the landlord, but as an agent I will try and speak fairly as between landlord and tenant. It is very easy in a matter of this sort to air the grievances of the tenants, or those of the landlords. A discussion of this sort, I take it, is to aid the Legislature, if we possibly can hereafter; to give absolutely fair play to the good landlord and the good tenant, and guard ourselves against the poor landlord and the poor tenant. As far as Mr. Hooper's paper goes, I congratulate him on it, and there is nothing in it which I would quarrel with. I quite understand the landlords and the tenants he is referring to, who are actually enemies of the grower because they will not do their part in a fair and proper way; but he was simply speaking of landlords who take advantage of the tenant's position. He came to certain conclusions and put certain points before us. One of these dealt with the rates. I think he said that he was in favour of the rates being divided between the tenant and the landlord. Now, I believe, as a matter of principle, that that policy would be bad. I think the occupier of the land must pay the rates, but I venture to agree that the whole incidence of taxation is absolutely wrong, and I do not suppose that it hits any class of land harder than that on which fruit is grown. So far as fruit growers are concerned, I agree they are taxed in a way which does not apply to the community generally, but whatever the rates are, I fear it would be a bad day if we divided them between landlord and tenant, because it would only mean further difficulties as to rating, and it would mean the rates being put by an unscrupulous landlord on to the rent in some shape or form.

I do not think we can do better than follow the remarks of the Chairman and Mr. Hooper by dealing with the points of the recommendations mentioned in the summary of the Departmental Committee of the Board of Agriculture this year. Their Blue Book has come out and is most valuable. It is full of information, and at the end some forty suggestions are given. I am not going to propose that you should consider these forty suggestions; but there are ten of them that directly touch the question under discussion this afternoon. They have already been referred to by the Chairman and Mr. Hooper. It is important to have something definite before us to discuss, and I would ask the Chairman and the other members if we could not discuss these recommendations and suggestions this afternoon. If we can agree to some we shall probably be helping those who hereafter will be responsible for the legislation.

The first recommendation I would take is No. 7: "That the various Agricultural Holdings Acts should be consolidated into one Act." We are all agreed that that should be done. I do not think there can be two opinions on this point. No. 8 says: "That the Market Gardeners' Compensation Acts should be amended by making Section 4 retrospective." That, I think, is absolutely fair and should be accepted. No. 9 says: "In cases where a tenant gives notice to quit, he shall not be entitled to receive compensation unless he present to the landlord a successor who is willing to take over the holding at the same rent; that in the event of his so doing, and the landlord accepting his

nominee, the compensation be paid directly by the new tenant to the old tenant, but that the landlord have the right to refuse to accept the outgoer's nominee, in which case he must pay compensation to the outgoer under the provisions of the existing law." So far as the landlord is concerned that is absolutely fair, and so far as the tenant is concerned I do not think we can raise any objection. If he has got his garden and his ground into such a condition that he cannot get the incoming tenant to take it, I think it would be pretty certain that he is not entitled to much compensation. But of course that touches the large question of agreements. For my own part, and for those I represent, I always like to see the landlord do more in helping the tenant so that he should not have such a large capital outlay, and to charge a fair rent for it. I am sure it would be better both for the landlord and the tenant where that could be done. Of course this is only a general recommendation. It is impossible to discuss agreements for every district. But it would apply equally well wherever there are leases.

The next suggestion, No. 10, runs: "That the Board of Agriculture should appoint experts in fruit valuation, and should call them together for the purpose of formulating general rules for estimating the amount of compensation to be paid to an outgoing tenant of a holding under the Agricultural Holdings Acts on the basis of the value to an incoming tenant." We all agree to that.

The next recommendation, No. 11, is: "That the State should be empowered to lend money to landowners who grow fruit on their estate, subject to suitable conditions, for the purpose of supplying the ready money required for the payment of compensation at the determination of a tenancy." I know it is very easy to say lend money to the landlords with fruit on their farms, but the question that always comes in is the question of security. If the landlord could offer further security than the actual ground under fruit cultivation it is a very easy matter. But it is not so easy a matter if you borrow entirely upon the value of the ground under fruit cultivation on account of the variation in the value of the fruit from year to year; and we must always keep that in mind. It is the first point one naturally looks to when lending money.

The next suggestion, No. 12, is: "That it would be to the advantage of landowners and tenants in fruit districts if, under the provisions of Section 5 of the Agricultural Holdings Act, 1883, they settled the basis of compensation by the *particular agreement* therein referred to." Of course, instead of leaving things to arbitration, it is much better, as far as possible, that a definite agreement should be made before any tenancy is put into force, and especially in cases where a certain amount is done by the landlord and a certain portion by the tenant.

Suggestion No. 13 reads: "That a Bill should be passed for facilitating the purchase of small holdings by tenants, with assistance from public funds, somewhat on the lines of the measure brought in by the Right Hon. Jesse Collings, M.P., in the session of 1904." The difficulty at once is the security for the money. We have from time to time had suggestions made that the Government should lend landowners money for building cottages, and for various improvements. It is all very well to lend money for any specific purposes of agriculture. Looking at it

from the trader's point of view, agriculture is an industry, and we should have the trader asking why are the Government lending money to one trade or industry any more than to another? But talking about lending money, except on land, you would have very little security beyond what money is sunk in the business, and the business may go wrong; I do not think it is any good our asking the country to grant a favour to a particular class or industry which we should not think for a moment of granting towards others.

Suggestion No. 14 reads: "That rule No. 8 for the assessment for income tax, whereby market gardens and nurseries are assessed under Schedule B according to the rules of Schedule D, be repealed so far as it applies to market gardens." That deals with the question of the incidence of taxation, and I hope we shall fight it very hard, especially the fruit growers. I cannot see why we should be penalised because we have adopted an advanced stage of agriculture more than the owner of a neighbouring farm who may be a very successful breeder of shorthorn cattle, or horses, which sell at very high prices. After all he is only using his capital, and he does not pay a penny more. He is simply rated to his rent. It seems extraordinary that the fruit grower should be again rated because he is engaged in advanced agriculture. Where it is a question of cattle-breeding, or even game farms, the farmer does not have to pay extra, but directly he goes into the fruit business the tax collector is down upon him. Then there are two more recommendations.

Recommendation No. 16 reads: "That in the case of glasshouses, the allowance of one-sixth, given to dwelling-houses for repairs in the assessment for income tax, be increased to one-third, by making a special allowance of one-sixth for renewal, in addition to the one-sixth for repairs." I do not think the present allowance is sufficient where glasshouses are used for commercial purposes. They are exceedingly temporary, and you know, when it comes to a question of valuing again, how quickly they depreciate.

Recommendation No. 17 is: "That the benefits of the Agricultural Rates Act of 1896 be extended to glasshouses used for commercial purposes." These are the whole of the recommendations of the Committee so far as they affect the papers this afternoon. If, instead of discussing generally, members will offer us their advice on these recommendations, we shall have something tangible before us.

THE DISCUSSION.

Mr. LANGRIDGE: I gave evidence before the Departmental Committee and one of the principal points brought out was that local rates and imperial taxes ought to be reduced. As to the retrospective action, there are two sides. I think the outgoing tenant should settle with the incoming tenant. There must always be considerable risk on both sides.

Mr. A. H. MATTHEWS (Secretary, Central Chamber of Agriculture): I must, sir, congratulate you and your Committee on the report you presented. It has one advantage over many departmental committees' reports, and that is that you have expressed it in language which can be "understood of the people." That is a very great advantage. I regret very much that in your recommendations—in dealing with the question

of taxation—you made those recommendations apparently in the belief that the Agricultural Rates Act was to be permanent. I hope that the question whether glasshouses are to be rated on a deduction of one-sixth or one-third will not come into public consideration very much, because I want the matter treated on a very different basis. I want the Poor Rate, the Education Rate, and the Highway Rate to which glasshouses are rated, to be made charges on the national revenue ; and although I quite approve of your recommendations so far as they go, it is only on the understanding that the Agricultural Rates Act is looked upon as a temporary measure. As a definite outcome of this Conference I should be glad if a resolution could be proposed and carried unanimously urging the Government to pass measures dealing with the whole question of local taxation on the lines recommended by the Royal Commission. One other point, I think, might be dwelt upon. In your tenth recommendation you suggest that the Board of Agriculture should appoint experts in fruit valuation for estimating the amount of compensation to be paid to an outgoing tenant. I quite agree that it would be a good thing to appoint experts ; but I think it would be better if, instead of the Board of Agriculture appointing experts to formulate general rules for estimating the amount of compensation, a joint Committee could be nominated by, let us say, the Royal Horticultural Society, the National Fruit Growers' Federation, and the Surveyors' Institution. I think the recommendations of such a joint Committee might perhaps be more readily acceptable to fruit growers and valuers, than recommendations by a Committee nominated entirely by a Government department. I have in my mind, that some twenty years ago the Newcastle Farmers' Club appointed a special Committee, and instructed that Committee to draw up a scale of compensation for unexhausted improvements. The scale recommended by the Farmers' Club was adopted by the whole of the North of England. A Committee of the Central Chambers of Agriculture formulated a scheme for the whole country. That was only in 1902, and I am glad to say that that scale is coming into much more general use than any scale before, and that was because it was a scale adopted by purely practical men, and I think matters become established on a more firm footing if they are done by private persons, or societies, than if done entirely by a Government department. One of the recommendations made by Mr. Hooper was that the rates should be divided between landlord and tenant. I know a good many people are in favour of it, but I think it would end in an advantage to the occupier, because the real incidence of taxation is on real property, and you will find that in the end all the local burdens fall on the shoulders of the landlord. That is not my dictum. It is the opinion of the late Mr. Gladstone.

MR. EDWIN VINSON: I am pleased to be able to say that I am personally greatly indebted to Colonel Long for his Act. Before it the landlord had the right to the trees immediately they were planted. Since the passing of Colonel Long's Act we are in a different position, and now the landlords are complaining. Well, a man cannot be at the wicket all the time ! I look upon that Act as the salvation of the fruit-growing industry of this country. Owing to it I was enabled to obtain £1,200.

Mr. W. G. LOBJOIT : One thing that has arisen from that Act is that it is difficult to get landlords to consent to letting their land for fruit-growing, and that is a difficulty we have to face. Owners are few in number and they hold the monopoly. Everything in commerce can be increased, but you cannot add to the land, and you cannot grow fruit unless you get land. We should devise some means to induce landlords to let or sell their land for this purpose. You are met by the sacred rights of property, and it is dangerous to tread on them. We shall have to think of some means by which landlords shall not be able to hold land for their pleasure that is wanted for the welfare of the nation. Of course there are plenty of schemes on foot to achieve this end. In Ireland there is compulsory purchase of land ; then there is the taxing of land values. It is not for me to speak on these matters. If you want to extend fruit-growing in this country you should find some means of inducing or forcing the landlord to let the land, unless you are prepared to take it at your own risk. There are very few bad landlords in England, except those who have got lawyers at their elbow who put them up to tricks they would never think of ! Gardeners must not be allowed to let themselves be forced to contract themselves out of the Compensation Act. I do not think it passes the wit of man to discover a basis of compensation for planting fruit trees. I do not like the Evesham custom. I think a great deal of difficulty to the trade arises from it. Then as to the income tax. Why should a market gardener be compelled to pay upon a different basis from his neighbour, the farmer ? Every market gardener who cultivates ground of more than ten acres is a farmer. On the question of rating—particularly in the case of glasshouses—there are great anomalies. In one district, glasshouses are rated at £150, and in a contiguous district at £50. I cannot see why the assessment should be raised by planting fruit trees. I see no distinction between a fruit tree and a sack in the tradesman's shop. They are both stock in trade out of which the man makes his income. I hope, when the question comes before the Government for the alteration and reform of the incidence of taxation, the various departments of the fruit-growing industry will be heard in some definite way, and that we shall not all be at sixes and sevens in this matter. I have the honour to be a member of the Central Chamber of Agriculture, where market gardeners are looked upon with small favour. There seems to be great difficulty in getting the various branches of the industry to co-operate.

Mr. MARTIN (Evesham) : I lately disposed of 100 acres under the Act, and I went out exactly as I went in. The chief reason of the success of that Compensation Act is that the tenant finds the incomer. We put the matter in the hands of some local valuer and we leave it in his hands. As to the incidence of rating, the overseers said that I made a profit of £700, and I had the utmost difficulty in persuading them that I made a loss almost of that amount.

The CHAIRMAN : On the whole the members of the Fruit Committee may feel very satisfied at the course the discussion has taken, and it is gratifying to us, who took a great deal of trouble, to see that our recommendations have generally been supported on the present occasion. I think Mr. Lobjoit put his finger on the real difficulty when he said we had to deal with a different aspect of the Compensation Act, viz. its deterrent

effect upon the landlords. Our object was not to strike at the root of the Act, but to mitigate this deterrent effect. It was for that reason that we made the suggestion of the plan for lending money to the landlords by the State, in order that they might have money on easy terms for the purpose of paying the outgoing tenants. In regard to the rate question, Mr. Hooper and Mr. Matthews dealt with the matter. Mr. Hooper dealt with the general question of the rating of land. I entirely agree with his views, but we were merely dealing with the one question of fruit—not with the whole question of the rating of land. We thought we ought to deal with the question before the country at the moment. Mr. Lobjoit asked why the rates should be raised. The rateable value of a shop is not raised by the value of its contents, but planting fruit trees does increase the rental of a piece of land. Therefore, I do not think I could suggest that the assessment should not be raised; but as fruit-growers we do say that there should be a delay before doing so.

The Conference adjourned to the following day.

THIRD DAY, OCTOBER 12, 1905 (Morning Conference).

Subject—

“RAILWAY GRIEVANCES.”

*Chairman—*SIR ALBERT ROLLIT, M.P.

The CHAIRMAN briefly called upon Mr. Berry, of Faversham, to open the proceedings.

Mr. BERRY: It is a very great pleasure to me, Sir Albert, to have something to say on this occasion when you are in the chair. If I may refer to your services to traders in the past, you will remember, I am sure, the arduous struggles the traders had in the early days, when, some fifteen years ago, you took a very strong and leading position in helping them to get what they otherwise would not have got. Those who took part in the events of 1893 will remember as long as we live those important and exciting discussions in the House of Commons led by yourself and Sir James Whitehead.

The question of transport is one of the greatest moment to all traders, especially to those who, like fruit growers, deal in perishable merchandise. Many difficulties have arisen between the traders and the railway companies, some of which are capable of adjustment, and it is to be hoped that the latter will, if only in their own interests, perceive the wisdom of stimulating and developing the fruit trade. It is often contended on behalf of the railway companies that, as the quantities of goods consigned increase, they can afford to reduce the rates charged for the carriage of them. If this is the case, fruit growing certainly has good claims upon them for consideration, as it is an industry which is increasing, in spite of grave difficulties. It was shown before the Departmental Committee of the Board of Agriculture, which recently sat to inquire into and report upon the fruit industry of Great Britain, that within the last thirty years the acreage of orchards has increased from 148,221 acres to 243,008 acres, or 63·9 per

cent., and that, as regards small fruit, there has been an increase within the last seven years from 69,792 acres to 77,947 acres, or 11 per cent.

By that Committee a good deal of evidence was taken respecting the railway grievances of growers, and certain conclusions were arrived at.

Respecting those conclusions, there can be no doubt that a revision of the existing working classification would be advantageous. There is nothing to prevent the railway companies from making such an alteration, provided that they keep within the limits imposed by their Acts of Parliament. A revision of the working classification might be discussed, and possibly effected by means of meetings between representative fruit growers and the managers of the railway companies. This course of action was adopted with considerable advantage in the case of the Railway Rates Inquiry, when the existing statutory classification was settled.

In respect of any points which could not be mutually agreed upon, the assistance of the Board of Trade, or Board of Agriculture, or both Departments might be invoked.

For encouraging the development of fruit culture, it is necessary not only to have the lowest possible transport rates, but also the utmost facilities for ensuring prompt delivery (at all events of the more perishable fruits).

As regards rates, it is doubtful whether the abolition of "owner's risk rates" would be satisfactory to the growers generally. There appears to be no reason why the growers should not have the alternative of two rates, provided that the rates at company's risk are reasonable in the interests not only of the company but of the growers, and that, if the railway companies adhered to the present "owner's risk" conditions, provision should be made for ensuring that in all cases a full and proper abatement was made.

As regards claims relating to goods sent at "owner's risk," the railway companies may be within their rights in combining to resist such claims, but that combination should not provide, as it does at present, for the total rejection of such claims without inquiry into their merits. There must be many cases in which loss or damage is caused by, and is known by the railway companies to be caused by, the wilful misconduct of their servants; and if they were to meet such claims fairly, they would be likely to gain more in the long run than they would lose.

Another grievance (which is forming the subject of inquiry elsewhere) is the preference given by the railway companies to foreign produce. It could not be denied that, while they had been spending enormous sums of money in providing steamers, and docks for their accommodation, for the purpose of developing the importation of foreign produce, they had not gone out of their way to encourage any branch of home agricultural traffic. If the companies would adopt similar tactics with reference to the fruit industry, they would find their reward, and the growers and consumers also would benefit.

There have been signs within the last few years that the companies have been rather more ready to recognise the claims of the traffic in home produce, and, if they are sincere in their professions, the principal grievances of the growers may be remedied. However that may be, they cannot complain if, in view of their closer combination and of the

immense power which it places in their hands, some official (as suggested by the Departmental Committee) or a Department should be charged with the duty of watching over their proceedings and reporting to Parliament thereon.

The "Conciliation Clause" of the Act of 1888 has been referred to as having furnished a means whereby a certain proportion of complaints made under the clause were satisfactorily settled. Agricultural complainants are, however, at a disadvantage in discussing such matters with the expert representatives of the railway companies, and it is very desirable that the Department specially charged with the care of their interests should be empowered, if necessary, to assist them to formulate and present their complaints.

However much may be effected by negotiation, it is certain that some questions must remain for determination by the Railway Commissioners, but no fruit grower could afford the luxury of a contest before that tribunal, and the proper course of action would appear to be to empower the Board of Agriculture and Fisheries, as the Board of Agriculture in Ireland has been empowered, to act as prosecutors on behalf of agriculturists in that Court.

Finally, no individual should be subjected to injustice by reason of the powers possessed by railway companies. Their present maximum powers were shown by the proceedings of 1893 to be too high to afford any protection to traders. There should be a right of appeal against any rate deemed to be unreasonable, instead of an appeal only where a rate has been increased, or where it is unduly preferential.

One thing I strongly object to in the report of the Departmental Committee is where it is said that it is desirable that railway companies should provide special waggons for the carriage of our goods. I strongly protest against any such statement. It is the very thing railway companies want. If they can only get you to ask for something which they will give you, you are in their hands for ever. You will not be able to get the rates reduced if they provide such waggons. We want no accommodation or consideration in any way for our business other than cheap and quick transit. If we get quick transit the fruit won't be in the waggons long enough to come to any danger, and in the ordinary goods waggons I have never known fruit, except there has been extraordinary delay, to be damaged through transit, where boxes are used, and where the waggons are ventilated at both ends. This is only a matter of one or two pounds per waggon. The other thing I wish to specially refer to is why we should not have cheaper rates all round for British-grown fruit. We want no special station accommodation. We load up our fruit at country stations where we unload manure waggons, and mainly with our own hands. The fruit has to be loaded in one or two hours, the trains collect the fruit at a few stations, and so are only run in about a couple of hours before they set out. There is no station accommodation required other than the ordinary siding, and no shed or grain warehouse is needed.

I have looked out a few items for comparison. The bulk of common fruit is carried in Class 2. We have to begin the fight over again, and we should be able to get the bulk of common fruit carried in Class 1. If you take grain and flour, the rate for flour, over a distance of 144 miles in two-

ton lots is, I find, 8s. For comparison I have taken 140 miles for plums in two-ton lots, delivered, 23s. 4d. I have looked into the question of cartage, and, taking the Northampton scale, the cartage in small towns is 1s., in big towns from 1s. to 2s., and in London 2s. 9d. The flour has to be shunted for shelter into warehouses which have been built at very great cost, and where it is kept until it is convenient for the trader to effect delivery. All this comes into the 8s., plus a fractional charge of 3d. or 4d. a ton, against 24s. 4d. for the same services, whereas we want no accommodation in the country or in the town. I once had this personal experience. The station was empty as far as passenger traffic was concerned; every man was eager to get his stuff away. The fruit was taken from the train and the train was shunted out of the station within three-quarters of an hour; whereas, in the ordinary case of goods in Class C, the 8s. 4d. covers two or three days' manipulation. I think on that basis it will be said that I have given extreme cases, but there are hundreds of similar ones. In the case of plums, there are station terminals 1s. 6d. at each end, loading 8d., unloading 8d., covering 2d., uncovering 2d. These charges are most unreasonable as between plums and flour—that for the latter being 8s. against 24s. for the plums.

Mr. JOHN IDIENS (Evesham): I have not come from the Vale of Evesham to-day, where extensive fruit growing and market gardening are carried on, to tell you that the railway companies serving our district are our worst enemies, and we have all sorts of grievances against the treatment we receive from them in dealing with our traffic. It is pleasing to me to be able to say we recognise and look upon them as being our best friends. Since the inauguration of the National Fruit Growers' Association, we have been able to meet the railway managers on common ground, and through the Association we have been enabled to ventilate and discuss what grievances we were suffering under, such as inequalities with regard to railway rates, transit, proper conveyances for carrying our produce, and it is gratifying to me to be able to say that we have been met in a very liberal spirit by both the Midland and Great Western Railway Companies, and the feeling between traders and these great carrying companies is far more cordial to-day than it was some few years ago.

I do not agree with Mr. Berry in regard to not asking the railway companies for special waggons. I think, when we met the railway managers some two years ago, it was one of the principal questions we put before them, and we were readily met by the Midland Railway Company, who agreed to provide 500 properly ventilated trucks, and these trucks have been of the greatest benefit to the trade of the country. I could give plenty of instances where ripe fruit has been loaded in open waggons, and where in two days the fruit has been spoilt. On the other hand, in the case of fruit that has been carried this season and last, in these ventilated vans, no complaint arose whatever in any instance. Therefore I look upon the provision of these ventilated vans as the greatest benefit to the fruit trade generally.

I think it is just as well that fruit growers should realise the fact that railway companies are trading concerns like our own, and when we come to consider that the average earnings on their ordinary stock only amount to about 3 per cent. we should recognise that we cannot expect them to

carry our produce to all parts of the kingdom by express trains at rates unremunerative to their shareholders.

I should like to give a few particulars with regard to our industry in the Vale of Evesham, having been associated with it myself for a great many years.

Just to prove to what extent we are indebted to the railway companies I have named, I would mention that in the year 1865 thirty to forty truck-loads in the height of the season was considered a big traffic, and most of this was despatched from two stations. Now it amounts to ten times this quantity in the busy season, and fourteen railway stations have been provided within a radius of five miles of Evesham. Special express goods trains are run to all parts of the country throughout the season. Fruit loaded at mid-day is landed at any part of Scotland and the principal towns in Ireland early next morning. Consignments to these parts a few years ago were two days in transit.

The acreage (all practically under small holdings) has increased from about 1,500 in the former year to 15,000 at the present time, within an area of four or five miles, and is still extending.

We often read reports in newspapers that large quantities of fruit in certain seasons are allowed to rot on the ground owing to the action of the railway companies in charging excessive freights. I do not share in this view myself, and candidly say that in the whole course of my long experience I have never known fruit that was fit for market purposes wasted owing to the fault of railway companies.

I expect this idea arises from the fact that tons of low-quality apples and pears are often seen in grass orchards lying under the trees untouched.

I need hardly remind this meeting that it is pretty generally agreed amongst practical men that seventy-five per cent. of the fruit grown in British grass orchards is small and common undersized fruit, and not good enough to-day to send to any market to compete with the better-grade fruit that finds its way into our markets. What was good enough even ten years ago for British markets will not do to-day.

With regard to railway rates for the carriage of our produce from the Vale of Evesham, I have no hesitation in saying that rates in operation are fair and reasonable, with some few exceptions; for instance, I will read the following cutting from a Newcastle paper:

"One still hears the old complaint about the railway rates. Some of these complaints will not hold water when inquired into, but, on the face of it, it often seems that the railway companies take a big proportion of the price produce makes. For instance, an Evesham salesman the other day showed us an account for some mixed produce sent to Newcastle-on-Tyne. Good prices were realised, and the total came to over £7, of which something over £4 went to the railway company for carriage, and less than £2 to the salesman. Of course Newcastle-on-Tyne is a long distance away, but this does seem rather heavy."

Complaints of friction often arrive owing to the complication of the Clearing House classification. As far as my memory serves me, this is formulated upon lines almost similar to those of forty years ago.

Times have changed, as we all know, especially in the fruit trade, during these years; and what is wanted to clear away a lot of these

complaints and friction between traders and railway companies is a revision of the classification, to bring it up to more present requirements.

To illustrate my views with regard to the classification, I have taken a summary from the book issued by the companies. Fruit and Vegetables, I find, are classified under forty different headings, and I venture to say there are very few traders who can make themselves conversant with the different phrases inserted in connection with the rate chargeable. In order to facilitate the carriage of traffic, especially from stations where no special rates are in operation, the classification should be formulated on a more uniform basis, and should comprise two ordinary classes under the plain heading of outdoor fruit, and market-garden produce for lots over five cwt. and under two tons; and exceptional classes for lots of two tons, four tons, and six-ton loads.

Railway companies should agree to meet in conference say half a dozen practical representatives of the fruit growers and market salesmen with the view of arriving at a fair and common-sense decision with regard to the alteration and modification of the classification; and it should be recognised that our produce to-day is a common article of food for the people, not a luxury for the well-to-do, and rich people as formerly.

To bear out this argument, I remember reading a few years ago a statement made by an old friend (Mr. Geo. Monro), that in the year 1860 in London there were only three fruit-shops, and these were practically closed nine months in the year owing to the want of produce to sell.

Now there is just one other exception I wish to make with regard to railway rates, and this is with regard to the action of a northern railway company which is serving a working-class population of over one million in fifteen towns alone. We cannot get this company to fall into line with others in giving special rates. Although the English growers have to compete in the district with countries like Holland, Germany, and Belgium, who get their produce into the large shipping towns at 50 to 75 per cent. less than this railway company charges the English growers, they refuse to modify their charges. Their excuse is that it does not pay them to carry English produce unless sent in large bulk. If this is so, why are other companies anxious to cater for English growers at reasonable special rates, which on the average are 25 to 30 per cent. less than those the company referred to charges?

They also retort by saying: "Get your growers to combine and send in truckloads of two tons and upwards, and then see what advantage they will get." Well, on working out this advantage I find on two-ton consignments it would amount from 2s. 3d. to 2s. 7d. per ton as compared with the rates for a three cwt. lot of produce.

Combination is all very well, but I say, with regard to mixed market-garden produce and fruit, it is next to an impossibility, inasmuch as the difference in prices would average from 50 to 100 per cent. This is accounted for by variations in soil and practical knowledge of culture by the different growers.

In conclusion I would say that all the British grower asks for at the hands of the different railway companies is fair play and reasonable rates, when they have to compete with practically all the nations of the world;

and we also want them to recognise that fruit growing and market gardening are becoming a leading and a great national industry.

Before sitting down I should like to refer to the question of the carriage of flour. I do not think myself that the comparison between flour and plums is a fair one, seeing that the fruit has to be dealt with in a very special way ; express trains are provided—

Mr. BERRY : Not always.

Mr. IDIENS : When this fruit gets to the market early deliveries have to be arranged for, and empty packages have to be brought back long distances, which must be a loss to the railway companies.

A VOICE : They are paid for it.

Mr. IDIENS : No.

Mr. BERRY : Yes, and at a very high rate.

Mr. IDIENS : Seeing that the best classes of fruit average £25 to £30 a ton, I do not think we can ask the railway companies to charge the same rates that are charged on flour.

Mr. GEO. MONRO (President of the National Federation of Trades Associations) : Mr. Berry and Mr. Idiens have spoken as growers. As representing the salesmen I have taken a rather broader view of the question. I will read what I have to say, and will add one or two words in addition to the paper. I am allowed to take part in this Conference on Commercial Fruit Culture as representing the views of salesmen on the important matter of distribution, and that turns directly on the facilities given to the trade by the railway companies. I am not going to take up valuable time with a long list of grievances, but will state at once that there is a very strong feeling amongst salesmen in all parts of the kingdom, as well as amongst growers, that this industry does not get the treatment it deserves, being as it is a comparatively new one, and, to quote the Report of the Departmental Committee appointed by Lord Onslow, "the only branch of agriculture that is showing signs of increase," and also being from all points of view a national industry worthy of encouragement. Not only does it help to provide good food for the million and employ a large number of well-paid hands directly, but it benefits a great number of other trades, and not the least question from a national point of view is that the consumption of fruit does more than anything else towards making the people temperate and healthy. We therefore claim the best consideration possible, and I need not say how we welcomed the Government inquiry mentioned above, the report of which should be read by everyone interested in the welfare of his fellow-countrymen.

Some seven or eight years ago it was felt that the salesmen in different markets should form associations, so as to be in a better position to deal with trade matters, and especially with railway companies. This was done in several large centres, and three years ago it was decided that the time had come for an organisation of a national character, and the present Federation was formed, to which all the existing Salesmen's Associations are affiliated, as well as a large number of individual traders in different parts of the country where no associations exist. This was felt all the more necessary owing to the action of the railway companies combining together, introducing the vexed question of the owner's risk, and

refusing liability in cases of damage and late delivery where they used to pay claims, and in all cases making it more difficult to get fair treatment and suitable service. As an instance, they used to acknowledge claims for goods when late for a market for which they were sent; now, since they have combined, they maintain that a delivery at any time of the day is a good one, and even where the goods have been several days late. This, of course is most detrimental to the trade generally, as well as causing heavy losses to individuals.

Another result of railway combination is that any suggested alteration of conditions has to be laid before the Conference of Railway Managers to be decided. As an instance of that I will give the result of a most vexatious condition attached to the carriage of tomatoes. Everyone knows what a tremendous trade has developed in these, many thousands of tons being grown annually, and because they cannot be successfully grown out of doors the whole trade would have gone to the foreign producers, had not our growers taken them up and grown them under glass. The railways, because they need the protection of glasshouses, put them in Class 4; afterwards they made what they considered a great concession and allowed them in Class 2, if the baskets were "lidded," or, in other words, giving them the rate of foreign ones if growers took a lot of unnecessary time and trouble in packing them, their contention being that a wicker lid prevented plundering, and also saved them from damage. Most of the home-grown ones are packed in strikes containing twelve pounds, of the same shape as a sieve, and, being of a uniform size, stand on each other without bruising the fruit, and can be packed in vans more firmly than when "lidded." We have tried all we could to get them to withdraw their unreasonable condition so far as these baskets are concerned. I had a personal interview with the managers of the four railway companies which carried about ninety per cent. of the whole traffic, and they all agreed that the condition was unnecessary, and promised to do all they could to get it withdrawn. It has been brought up two or three times before the Railway Conference, and I believe the managers I saw did all they could, but the others would not agree, and tomatoes must still stand in Class 4 unless growers and salesmen go to the trouble and expense of "lidding" every basket. This means about double the time in packing, and carriage to be paid on every basket for an unnecessary lid, both when full and empty. The difference is in some cases double. For instance, the rates to Edinburgh are 98s. 4d. "unlidded," "lidded" 51s. 8d.; to Glasgow, "unlidded" 100s., "lidded" 51s. 8d.—and there are often tons going there daily. The railway managers who are interested want to give way, but their hands are tied. They know that they stifle the trade and are losers of a lot of traffic, as it is not always possible to fulfil this vexatious condition.

The classification generally of horticultural produce is also unfair to the trade, and after careful and full consideration the Federation have decided to approach Parliament on the subject, especially as our trade, being small and not organised in any way, was not represented when the railway companies got the present rates approved by Parliament, with the result that they obtained power to charge what are now fancy rates, and, from their own point of view, keep them unnecessarily high. It is the

large amount of all traffic that pays the railway companies, not high prices on a little, and I contend that it is to the interest of the railway companies that our trade should be fostered in every way possible, especially as it is taking the place in many districts of other branches of agriculture, which are now no source of revenue to them at all. As an instance of this injury to their own interest, I will mention the facts in relation to the Channel Island traffic. At one time the South Western Railway and the Great Western Railway competed for this, and went to very great expense in building large and fast steamers in a most extravagant manner; they then combined, and not only raised the rates, but instituted a shipping charge of 1*d.* per basket on all produce. To this the growers objected and used every endeavour to get it removed, with no effect. The charge amounted to at least £10,000 per annum. Seeing that they could not get any relief, and that the industry could not stand the extra tax, the growers combined and last year started a shipping company of their own, which has already earned £20,800, all taken away from the railway companies—with as good a service. The result is that, now they have lost a lot of traffic, the railway companies have taken off the iniquitous charge, while the growers have learned that they can be independent of them.

The Channel Island growers are in a better position than inland ones, having an open route on the sea, but they feel the difficulties arising from railway combination as soon as they touch a port, and they are taking action to compel the London, Brighton, and South Coast Railway to give them rates from Newhaven to different markets, which they would probably be glad to give, were they not influenced by the other lines. In taking up an attitude of this kind they are not only putting difficulties in the way of a national industry, but in refusing traffic at a reasonable rate they are unfair to their shareholders, and it is quite time the whole question was reconsidered by the Government. At present they are able to cripple our trade sufficiently to counteract any benefits arising from legislation in other directions. I grant, in some cases where it suited them to do so, they have given facilities, but there is no guarantee that they will not be taken away again, and for an important national industry to be at the mercy of a monopoly is certainly unfair.

Our Federation have a case in hand now on behalf of the Lincolnshire Potato-growers, where the rates were raised 2*s.* per ton through the combination of the different railways running there. Land was taken and potatoes grown on the calculation of the freight which had been in existence for fifteen years—while this increase means about 15*s.* per acre tax on the whole area affected. Again, it is no use for landlords to grant cheap rents if the railway companies can step in and impose an extra tax like this. The enormous increase in our trade should lead to a decrease in rates, and there is no reason why whole truckloads of our produce should cost more for haulage than other goods. The companies treat fish very much more liberally, knowing that it would be water-borne if they did not; but if they can bring trucks of fish from Inverness to London at about 50*s.* per ton passenger train, they should not charge over double for our goods, and in addition 4*s.* 2*d.* per ton cartage from a railway dépôt to Covent Garden while they carry fish from the same dépôts to Billingsgate for 2*s.* 6*d.*

I have compared our rates with those of other countries, and find that in all cases they are higher here than they are abroad. In Germany and some other countries where the railways belong to the Government, all fruit is carried by *grande vitesse* at *petite vitesse* rates. The French rates are also lower, especially on goods for export, while the railway companies in America and Canada realise that it is to their interest to study fruit-growers and agriculture generally. Therefore we appeal to everyone to do all they can to get the matter put on a more reasonable footing, when the whole nation would benefit, and even the railway companies would be in a sounder position, as, by encouraging this branch of agriculture and especially produce grown under glass, they would very considerably add to their traffic in many other ways. We want to see them paying good dividends, and that can only be done by encouraging industry, and not by stifling it.

When Mr. W. Grays, of Liverpool, was President of the Federation and gave evidence before the Departmental Committee, he did so very fairly, but he seemed to have in his mind that it was only necessary to approach the railway companies to get what you wanted. He has acted throughout on that idea, but this morning I had a letter from him in which he says he wishes he could have been here, and adds: "I fear the Conference will be of little avail, and that we shall be compelled to go to Parliament for redress."

Those who took an interest in the Government inquiry will agree that we could not have had a fairer Chairman than our friend Mr. Boscawen. Practically the whole of that Report was drawn up by him. I, for one, never knew a Report spoken so well of by all the papers. But we have had to contend with railway companies since then. We have had a lot of matter before us, we have tried many ways, and we have come to the conclusion that there is nothing for it but to get our trades considered on the lines of other trades. I do not say the railway companies were not justified twenty or fifteen years ago in charging the rates now existing, but they are not justified in charging the same now, and at the same time giving worse conditions. The "owner's risk rate" is an abominable rate, and the condition that they put on, that they will not be responsible unless you can prove where damage is done, utterly nullifies any chance of getting redress. We cannot send a staff of men to follow the consignment everywhere. We might put them actually into the van, but while their eyes were turned in another direction someone might damage the contents. The trade was not properly organised when the existing classification was made out, and that is the more reason why we should ask for it to be reconsidered now. I wish to show how unjust the railway companies are to the inland markets. And I have got out some rates which affect my business—tomatoes. Take Manchester to London, 28s. 10d. if "lidded," 54s. 8d. if not "lidded" (nearly double). Newcastle, although the goods go over two lines, 36s. 9d. if "lidded," also 36s. 9d. if not "lidded." Leicester, 99½ miles, 38s. 5d. "unlidded," against Newcastle 36s. 9d., going over the same lines, and three times the distance. These figures are here in the official communication sent to me from the railway company, and anyone can see them. There is no sense in this. The reason, no doubt, why the rate to Newcastle is lower than the other rates is that it is possible to send

tomatoes to Newcastle by water. Another reason why we should go to Parliament is that while these railways worked in competition we had some chance of getting reasonable rates. But now railways are all alike. It does not matter so much about rates, if we can stand them, if we get some service in return. We are paying higher rates and yet we are not getting the service. We want the ventilated trucks, but we do not want the cool chambers truck for them to cuddle up our fruit for a week, and we do not need special services. There is no reason why they should be allowed to classify our goods as they are doing, and it is time our trade joined together to get every member of Parliament to support our case.

Mr. T. F. GODDARD, Solicitor to the National Federation of Trades Association: I speak with great diffidence, where so many are here better qualified to speak, but there are some points on which even a lawyer may usefully talk. I would first take a preliminary point, with regard to what Mr. Idiens said to-day as to the capital of the railway companies producing only three per cent., because this is a misapprehension, and whilst it remains it prejudices a trader in stating his case. This is one of those questions that we have no difficulty in meeting. Capital, as you are all aware, includes known watering, and unknown watering. The known watering is in the Board of Trade returns, and the unknown we must guess; but three per cent. is not, as a rule, on anything like the actual subscribed amount. It is not even money that purports to have been subscribed, but is on the market price. In the next place, also a preliminary point: railway managers ought to know the tonnage, train mileage, and costs and receipts in respect of the tonnage and train mileage for each class of traffic; for if you want to make a successful business you should know how you stand from day to day, from week to week, and from month to month, and this in respect of each branch and detail—for instance, a dairyman ought to be able to put his finger on every particular milk-cart and on everything carried by the cart. The railway companies could do the same, and until they do they are not doing their business properly or to produce the best results.

And now for the questions you are discussing. It ought not to be a question of Traders *v.* Railway Companies, but Traders *plus* Railway Companies. You must educate them. You have got to make railway companies understand that you are not satisfied, and that they will not make money, any more than you will, by their present methods. The railway companies by their conduct lose a whole series of fortunes each year for themselves as well as you, which are ready to be made by anyone who will tackle the question in a broad spirit, and get rid of prejudices. If you are going to make a fortune, on neither side must there be any waste. It is the duty of the grower to see that there is no waste. Both must set themselves to bring produce to market in the best and quickest way. I should think it is hardly understood by the majority of people in England how much time is really wasted in transit. What has caused this grievance? The first great cause is simply and solely the method which has been adopted for many years as the system of management. The idea of the railway companies always used to be—it is not altogether so now—that the boy should rise to the

booking clerk, that the booking clerk should advance to the higher positions, and so on. That is not always the best way of producing the best manager. Of course there are cases where men have risen from the lowest grades—from the bottom of the ladder to the top. But there are too many failures for one success, and even a success is qualified ; so it is fortunate this is being changed. Two of the best instances of the change are the appointment of professional men in Sir George S. Gibb, and Mr. Inglis.

Many people might say, Why don't we see improvements come quicker? And now I will specify some of the points where there is difficulty. One is the unfortunate concerted action of the railway companies, which tends to bring every good company down to the level of the worst in management, and when a good man gets to the top he is hampered by the groove-like lines of the past, and this at a time when it requires a very great genius to clean the Augean stable. Another trouble arises from the fact that Parliament started railway companies straight off as a monopoly, but it was not recognised at the time what it might mean. That monopoly was founded very much on the idea of coach-roads, for it was thought there would be plenty of competition and that traveller and trader would always have the alternative of two routes. But the idea of competition has come to an end because railway companies have said "We will all work together."

Another cause is that railway companies, in matters of litigation, have always been sure of special advantages. They have the most expert counsel with great reputations, and you have to employ the very best counsel to meet them. This has always been practically prohibitive, except perhaps in the cases of public-spirited traders, who feel they would rather be ruined than unjustly treated. Except in these cases the good results of litigation have been very slight, and you must consequently seek some other remedy. Then there is the question of carriers' liability, complicated as it is by the decisions of the House of Lords, which leave us still without a final decision as to what the law really is.

Now as to the remedies. Conferences with the railway companies are of no use. If I were advising a railway company I would tell them to confer till the day of judgment! You will never educate public opinion by conferences with railway companies. Such conferences are merely games of "bumble puppy." As to legislation, we have not got a clear law for the courts to decide upon. That is the trouble. There are points after points upon which we want to advise our clients, and to tell them what is law; for the Acts are so vague, and have become so confused by decisions thereon, that Parliament ought to take up this question, which is of real and practical importance to everybody in this country. It should not be a troublesome matter. I would suggest that they should draft some Bill in short form to meet the precise points. The first things you want are reasonable rates. I contend that it is not clear in law, and the general opinion is that there is no power in the courts to order a company to give reasonable rates. Then you want reasonable conditions of carriage. In the present state of the law as to owner's risk, you cannot really tell what those conditions may be. Then you want reasonable facilities—about that there cannot be the slightest doubt. Then there

should be power to re-classify any article. If an article has got into the wrong class, or some great invention or alteration in trade or agriculture produces an article in great quantities, surely there ought to be some power to get it re-classified ; then there should be power on the part of the railway companies to temporarily lower rates in the case of merchandise. I think they want that power ; and that they should have the power, when the time comes, to raise the rate again.

Then comes the last point. I think it should have very careful consideration, as at the present time it is a very doubtful one : I mean the question of concerted action. Personally, I don't like trammelling combination ; and you can combine if the railway companies combine, and if you are entitled to reasonable rates you can get your decisions. At the same time, I know some traders feel strongly that they do not like to combine ; but if, whether combined or not, all should be governed by a series of fair and clear legal enactments, and those enactments should be dealt with in the courts cheaply and expeditiously. There have been many suggestions as to tribunals, and I always come back in my experience that it is much more expensive and troublesome, and does not suit traders so well, to have commissions and other special tribunals as it does to have clear law on which to get a simple case fought in the courts ; but the law must be clearly enacted by Parliament, and then let the traders have their Federations and Associations, and let these bodies look after their interests. This will save money in the end, and, although I honestly confess it is not so good for the lawyers, it is the better way of doing good to the railway companies and their shareholders as well as the traders and the community ; only better defined law and a simple and cheap procedure in the courts are vital.

Mr. ROBERT PIPER (Worthing) : You will be convinced, after the speeches that have been made, that we growers have some grievances against the railway companies. Railway managers think the interests of their companies and the interests of the growers are opposed. I am sure that that view is altogether wrong. I believe the interests of the companies and the interests of the growers run on parallel lines, and if the companies would only give us lower rates and greater facilities they would find that instead of the amount in their exchequer being lessened it would be increased. It is no use going to them for concessions unless you can show them that it will put money in their own pockets. Some time ago, a deputation was sent to Sir Allen Sarle from the Worthing fruit-growers, to ask that a reduction should be made in the rate for cucumbers from the Worthing district. We were then paying 40s. a ton for grapes, and 35s. a ton for cucumbers. The deputation asked that the 35s. should be reduced to 20s. He said, " You are not asking much ! " and that he could not make the concession. One of the speakers then used this argument, and it prevailed : " I am putting up some new glasshouses in Worthing. I can grow in these houses grapes or cucumbers. If I grow grapes I shall be sending 25 tons of grapes from them when fully matured. Twenty-five tons of grapes at £2 a ton will be £50 in your pockets. If I grow cucumbers, I shall at once begin to grow 500 tons, which at £1 a ton will be £500 in your pocket, instead of £50. Besides, I shall want more manure, more fuel, and other things. Now what is it to be ? " Sir

Allen said, "You have made out a good case. We will reduce the rates from 35s. to 25s." Why did they do it? Simply because they found that by lowering the rates it would put money into their pockets. That proves that you individual growers should go to your own companies, as well as approach Parliament through your combinations, and that you should not be content to rest upon your oars and do nothing. If we work individually, we shall at all events have done some little service towards bringing about what we want. Railway companies will do nothing until they are forced. But the motor services are going to bring them to their senses. I hope this Conference will have the effect of enabling growers to live. They were content ten years ago to pay the rates when prices were different; but as prices have gone down, I submit that railway rates, in the same proportion, should go down too.

Mr. BOSCAWEN, M.P.: I should like to say a word upon this subject because it undoubtedly is a very difficult one, and is of the greatest importance to the future of our industry. As I have had opportunities of seeing both sides of the question, I would venture to make one or two suggestions as to how this question ought to be approached by growers and the trade generally. It is absolutely true that the trade has grievances against the railway companies, and we should try to remedy these grievances where we can. But I wish to caution all people engaged in the trade against taking up a hostile attitude to the railway companies. I am not suggesting that this has been done in the very temperate speeches we have heard to-day; but I have heard a great deal of evidence given by some people who take the line that railway companies are their natural enemies. I would caution them against that attitude because I do not think it is a fair attitude, and it is no good overstating your case if you wish to get redress. So far as the discussion to-day has gone, there is only one sentence that I would take exception to. I cannot agree with Mr. Berry, whose statement "that while the railway companies have gone a long way to develop imports, they have done very little to develop facilities for home produce." When anyone has seen what the Great Western and the Midland have done in building new stations and sidings, and providing special works, he must feel that these companies are now endeavouring to meet the trade—not out of benevolence, but in self-interest. Of course, Mr. Berry and I do not live on the Great Western or Midland, and I think even the South Eastern and Chatham are waking up lately.

What are our grievances, and where ought we to seek remedies? Taking them through and through, and having regard to the nature of the services, the rates are not unduly high. By passenger train, fruit sent 200 miles works out at three-tenths of a penny per pound. By goods, where plums are sent 200 miles, the fare works out at one eighth of a penny per pound. These rates cannot be said to be unduly high. The real grievance is that they are absolutely based on no principle. The classification in many cases is entirely wrong. The fact is that since that classification was made the fruit trade has grown enormously, and the present conditions are entirely different from what they were when the Act and classification were made. And that being so, what we should seek to do is not so much to go about asserting that rates are too high, but we should

remove the anomalies of the rates which undoubtedly press hardly upon our particular produce. The Committee hesitated to recommend a statutory revision because we were not a large trade, and to re-open classification on one question you would have to do it on all. Those of us in Parliament who are interested in the trade would be prepared to support a statutory revision, but you should try to get it done if possible without going to Parliament, and that could be done under the Act of 1888. Companies have altered the classification and have assisted traders in getting alterations made. Aluminium at first was put in Class 5, but it was altered to Class 3. Go to Parliament if you will, but in the meantime try to get any glaring anomalies in your classification removed under the provisions of the Act of 1888 by assistance of the Board of Trade. If you cannot get that assistance you would have a much stronger case when you go to Parliament.

But a question of far more importance than rates is prompt delivery, because fruit is the most perishable of all articles, and you want to get into the markets easily. It is in prompt delivery, I think, that the companies fail most, and you have got to press for some better remedy than you have at the present time. I do not quite know what means we have of enforcing this prompt delivery. You will have to get some entirely new definition of the liability on the part of railway companies, or you will have to get some system whereby they can be fined for every instance of lateness. "Owner's risk" is a perfectly absurd thing. You have to get proof of wilful misconduct on the part of railway officials. It is almost impossible to prove that unless there has been pilfering, and I would therefore suggest the substitution of the words "culpable negligence." It would be better if there were no "owner's risk rates" at all. There should be only one system of rates—company's risk rates—but they must be reduced to such a figure as would simply add to the present "owner's risk rates" sufficient to cover the liability of the company. I would suggest that 5 per cent. be added to "owner's risk rates," that the rate be made a company's rate, and that there be only one such rate for the future. If you availed yourselves of your power of going before the Board of Trade to show what you considered unreasonable, you would be able without litigation to remove some of the grievances from which you suffer. To meet the combination of the railways there ought to be a Government official to watch over the proceedings of the railways and to report to Parliament. I agree that the companies should have the power to temporarily lower their rate. They do so in the case of excursions, and why should they not do so when there is a glut of fruit, which would otherwise rot on the ground? Parliament will not let them do it, because before they again raised the rate they would have to show a reason why they should do it. I cannot agree with Mr. Berry about the special waggons. What we asked for in our Report was not special refrigerator waggons. What we did say was that quite unsuitable waggons ought not to be used. Speaking generally, I would ask you to try to carry out some of the suggestions which you will find set out in detail in our Report, and to bring all the pressure you can to get your grievances removed without going to Parliament. If the grievances cannot be removed in that way you must go to Parliament.

But I believe a great deal can be done without absolute Parliamentary action, and I ask your Federation to take this opportunity of working on the lines I have suggested.

THE DISCUSSION.

MISS CROOKS: I have been head of Lady Warwick's Cottage Garden Market for five years. We have also been striving in the direction indicated by the speakers to-day. During the last two years we have been trying to get concessions from the railway companies for small quantities, but we have only succeeded in getting a very few reductions. Everything turns upon that "owner's risk rate." If things go right nothing is heard of them, but if a customer complains that things do not arrive in good condition there is no redress. I quite agree with many of the gentlemen who have spoken. Most conferences are no use at all. I have attended many, and I have seen no results from any of them. I think with some people that the only thing that can be done is to take the matter to Parliament.

MR. C. BETTISON (Leeds): I join issue with Mr. Idiens that my part of the country has a good railway service from the Worcester district. We do not call the service good. I do not think he speaks for the majority of the growers in his district. I think he must have got some concessions that they have not got, and that that is why he is speaking for the railway companies. Some people would say that he held a brief for the companies! We, as salesmen, know that the service from Worcestershire is nothing like what it was. Three years ago, when the railway companies delivered goods too late for market, they paid us reasonable compensation. Since the combination of the railway companies that has ceased. I think, if we are to do anything, we shall have to agitate throughout the country, and that is what our Federation is trying to do. The companies are trying to shut the mouths of individuals by granting them concessions, and that is what they have done in the case of Mr. Idiens! We want something all round.

MR. IDIENS: I deny that I have got concessions as suggested! I say that on any fair construction these rates are fair and reasonable, and should satisfy any man connected with the fruit industry. As to my representing the Evesham fruit-growers, I would refer you to Mr. Boscawen. When he questioned the growers there I believe the answer he got was that everything was fairly satisfactory.

MR. THWAITES (Covent Garden): Mr. Idiens referred to fruit fetching £25 to £30 a ton. I do not think you will find £25 as anything like an average.

MR. CECIL HOOPER: There is one hardship in connection with owner's risk, and that is the loss from packages. When consignments of strawberries have arrived short I have claimed from the companies, and they have said they could not entertain the claim. In fact you must lose your whole consignment before you can sustain a claim. It is a great hardship to have to check the large quantities that arrive, on the spot.

MR. PERCY V. COOKE (Vice-President of the Jersey Growers' Association): I have attended one or two conferences in the Channel Islands,

and also drawn up a petition to the railway companies with respect to the iniquitous charge of one penny a package, which has been removed. But in the end we had to use force. I think the time has come for this "owner's risk" business—especially in the flower line—to be abolished. We should try to obtain further concessions from Parliament.

THE CHAIRMAN (Sir Albert Rollit, M.P.): I should like to say, as a member of the Council of the R.H.S., that I think it is doing a very good work in holding these frequent shows, and these conferences in connection with them. And certainly the debate which has taken place to-day, so reasonable in tone, is an illustration of the value of which I have been speaking. We have had a real conference—not a conference with the railway companies to which reference has been made. I think the conference will bear good fruit, if not in legislation, at any rate in some rearrangement by which the undoubted grievances of the traders will, I hope, be reduced. I am encouraged by Mr. Berry's remarks in reference to myself. He has reminded me that in 1888 I took an active part in connection with the railway legislation of that day. In fact I moved for the committee in the House—and carried it—which was the pioneer of the Act of 1888. That is now many years ago, and a great many things have happened since then, and if any legislator believes that what we had fifteen years ago suffices for to-day, he is misreading the history of our modern business life. We have moved with the times, and I think the time has arrived for further legislation. This conference will be of value, especially to traders, but I hope that it may also be of advantage to the railway companies themselves. I quite acknowledge the joint interest we have with the railway companies.

The motto of the trader in all forms should be "Live and let live," and we want the railway companies to let us live. We are not the natural enemies of the railway companies in any sense of the term. We believe we have a joint interest, and that the joint interest should be on the lines of progress and development, not of strangulation, restriction, and want of facilities. I remember a railway representative saying in a House of Lords Committee that "a reasonable rate was a rate which a trade could bear without breaking." But those days are passed, and we shall not be content to submit ourselves to similar conditions again. We wish the railway companies to realise what greater facilities and greater cheapness mean to the prosperity of the companies themselves, and the sooner the railway companies realise that, the better it will be for their shareholders. We hear a great deal of the want of facilities and unpunctuality, and we hear also a great deal of grumbling against the motor; but the motor, whatever harm it may do in the suburban districts to individuals, will teach the railway companies lessons. One thing, I think, seems beyond question. As Mr. Boscawen has said, we need relief from rates which undoubtedly are most excessive, and we have heard of a barrel of fruit costing as much to send from London to Glasgow as to bring it from New York to this country. As a shipowner I know that water transit is not so expensive as land transit, but it is not one-fifteenth less. Another thing which I think is clear is that a preference is given to the foreigner. I am not going to deal with the fiscal question, but there is one thing about which we all hold but one opinion, and that is that

we do not intend to give a preference to foreigners in these matters. I think some reform may be effected there. Fortunately for them, the foreigners have advantages we do not enjoy. They have State railways, and are not encumbered with the immense cost of construction and the purchase of land at an excessive cost, nor have they to suffer from watered capitals such as unfortunately exist in this country. Some twenty or thirty years ago we had a statutory opportunity to make our railways State railways, but we let the opportunity pass, and it may never recur, except at the cost of upwards of a thousand millions, to which the taxpayer would never submit. Rates and conditions, however, are the *crux* of our conference. My friend Mr. Vincent Hill once said that Parliament fixes the rates. Parliament does nothing of the sort. Parliament very roughly names the maximum rates, and that is a very different thing. That is a general rule which, if it were applied in every instance, would not last for a month. It is a mere general rule, and within it there is room for great excesses. Parliament does not fix the rates. Railway companies who have a practical monopoly have fixed the rates, and unfortunately legislation has been very much to the disadvantage of the trader. At first railway companies, as carriers of goods, were common carriers with all the obligations of common carriers even to the extent of assuring perishable articles. Then the Railway and Canal Traffic Act was passed, which required that all their conditions should be reasonable. And then came a case in which it was decided that where there was an alternative rate offered to the trader, he was bound by the special contract, even though the conditions might be unreasonable, and that is the source of all our difficulty to-day. The "owner's risk" contract, works the greatest injustice to the trader. Five per cent. on the "owner's risk" would probably be enough to pay the company.

Mr. BERRY: A great deal too much.

Sir A. ROLLIT: We have known cases where fifty per cent. has been charged. The railway companies could afford to carry at what is the present "owner's risk" charge, plus five per cent., but if in some cases they get fifty per cent. they are getting an excess of forty-five per cent., and that is monstrous. Take other conditions which have been made—non-liability for loss of markets and injury to goods. I have seen conditions by which the company's servants could eat perishable produce—"So they do"—and the company not be liable! How are we to try to meet that? My own opinion is that present legislation is incapable of meeting it. I believe myself that in many cases you would be better off without even the maximum rates. If you revert to the original common law, the conditions and charges would have to be reasonable. Now you have got from myself and others an extension of the County Court jurisdiction in all your districts up to £100, it would be very easy for a tribunal to say whether a particular rate or a particular condition is reasonable or not, and you could test this at no great expense.

There are other points, upon which it would be interesting to touch. While we are discussing railway rates do not let us forget that there are many other things which are very material in the conduct of our business. If we are asking the companies to be up-to-date, let us take care that we are so also. Let us take care, in dealing with the railway companies,

that they cannot complain of bad packing. And now a word about another point. The way in which fruit is offered to the purchaser is a matter of infinite importance in your interests. Upon the whole I think the way fruit from abroad is packed &c. is more likely to tempt the purchaser than the methods common in this country. In the next place, knowledge is the basis of modern business, and we need technical education applied to the fruit trade, a knowledge of vegetable physiology, plant food, manures, proper varieties—they are all of vast importance, and I say the education of to-day should teach more about the railways of the present, than of the Roman roads of the past. But after all, the great security for persons engaged in the fruit trades is an active belief in what is in my opinion the great feature of the century—namely, the value of organised and systematic effort on the part of traders. I have always done my best for the Chambers of Commerce with that object, and I believe the more you get into connection with Chambers of Commerce and similar institutions for the purpose of conferring and acting together the better for you. Why has the export agricultural trade of Denmark been so successful? It is owing to organisation and the collective system, and owing to care in the matters of transport and presentment, that their produce, representing thirty millions a year, comes so largely into this country. We have practically the same climate and similar conditions, and by a properly organised system a great deal of the imported produce could be raised profitably in this country. Of course there may be other questions, but let us get to know more about these things, and in that way we shall in the end, owing to our national character, beat and outclass the foreigner. Someone asked members of Parliament to help them. It is a difficult thing for members of Parliament to render help in the present condition of Parliamentary affairs. What is wanted is a consolidation of our Railway Acts. It is said of a certain Roman emperor—Caligula, I think—that he hung his laws so high on posts that his subjects could not read them, and then he cut off their heads for not doing so. It is somewhat the same with our laws. For our Acts and cases are buried in great volumes, so that no one can read them, and yet everyone is assumed to know the law, and is punished if he does not abide by it. All this should be made plainer, so that “he who runs may read.” I hope you have enjoyed the Conference, and that it will forward the interests of your most important trade.

THIRD DAY, OCTOBER 12, 1905 (Afternoon Conference).

Subject—

“DISTRIBUTION OF INFORMATION IN CONNECTION WITH THE PROPOSED ESTABLISHMENT OF AN EXPERIMENTAL FRUIT FARM BY THE BOARD OF AGRICULTURE, AND ITS POSSIBLE EXTENSION FOR DEMONSTRATION OF COMMERCIAL FRUIT GROWING.”

*Chairman—*COLONEL LONG, M.P., President of the National Fruit Growers' Federation.

The CHAIRMAN, in opening the proceedings, said: I think that those who have studied the programme which has been proposed for this three days' conference, will have grasped the fact that one of the objects in selecting the subjects has been to bring the various recommendations of the Fruit Culture Committee before the growers, and to get an expression of the practical views of practical men actually engaged in the trade. Now this morning there were several references by different speakers to the recommendations of that Committee. It is a well-known subject—that of railway grievances—to all growers. This afternoon we have rather a new subject to consider, and therefore I am going to read to you the recommendations in regard to it. The Committee put it first because they believed that such knowledge spread amongst the public—and the light thrown upon the trade would be very valuable. They therefore suggested: “That a special sub-department of the Board of Agriculture and Fisheries be established to deal with matters connected with the fruit industry. That there be two branches of such sub-department; (a) a Bureau of Information; (b) an experimental fruit farm.” I would rather draw your attention to “(a) a Bureau of Information,” because it might appear scarcely to come under the head of what we are going to discuss this afternoon. I think, as a matter of fact, it is a department which would form a connecting link between the theoretical and the practical man who lives in the country and carries on business on commercial principles.

The definition of what the Bureau of Information is to be is laid down in the Committee report as follows: “The functions of the Department would be twofold. It would, first of all, be a Bureau of Information and an Intelligence Department, collecting and tabulating facts and statistics relating to fruit cultivation in various parts of this country and abroad, keeping closely in touch with the County Council and other fruit stations, sending experts to visit plantations in the country, and ready at all times to render assistance and to tender advice to growers.” These travelling experts, going into all the districts of the country, would be in absolute touch with the really practical men engaged in the trade. They would listen to the statements as to difficulties experienced; they would communicate with the bureau or experimental department, and it would be for that experimental department to try to work out answers

to the questions put to them. No doubt many of the questions put to them might be cleared up by the experience gained in another fruit district, but there would be some questions which would require very careful research and experiment if you are to arrive at a true solution. During the last few days, while listening to the remarks of the speakers, one heard it pointed out that there were certain fruits which would be best for commercial purposes—both Pears and Apples; but in the course of the discussion another speaker very rightly observed that a certain variety which would be most profitable in one district would very likely fail in another. That is one of the points which could probably be cleared up by the travelling experts gaining experience in different districts. Then it was stated that for real commercial profit there was a distinct advantage in growing large “blocks” of one variety of Apple; at the same time it was pointed out that it was desirable to plant amongst these “blocks” other varieties in order that fertilisation might be perfect, and that that procedure was fraught with good results.

It is evident that particular varieties must blossom at the same time, but I cannot help thinking, that to decide what particular Apple-tree it is best to plant in a plantation where the main portion is of another sort, is a matter for very careful consideration and experiment. And remember, your experimental department would not have to wait while their plantations grew up, because they would be able to try experiments with blossoms from other varieties and so be able shortly afterwards to give authoritative decisions as to the best varieties to grow together as far as the fertilisation of the blossoms, largeness of production, and other points are concerned. That would come under the experimental department. Then we have been told about various manures and ingredients. I cannot help thinking that had there been an experimental department we should have known long ago what were the best materials to use considering the particular objects we were aiming at.

But what I wanted more particularly to draw attention to was the information department, because it is the connection between theory and practice—the theory which has to be worked into results by the practical man. Foreign governments have devoted a great deal of money and organisation to solving certain questions which are of great importance to various trades—not only to the fruit trade—questions in which men, actually engaged in the business, perhaps have neither the time nor perhaps the money to carry out full and comprehensive experiments. In England, for a great many centuries, we have rather gone on the principle that men engaged in a particular business or trade will thresh out for themselves the difficulties connected with their trade, on the ground that it would not only strengthen their character, but would be better in the long run. That was all very well in the past, but now that foreign governments are stepping in and giving such an advantage to their producers, I think the proposal to start an experimental farm is likely to produce good results, especially if we keep steadily in mind the fact that it is entirely a matter of business.

Mr. SPENCER PICKERING, F.R.S. (Director of the Woburn Experimental Fruit Farm), read the first paper. He said: Some years ago a party of farmers, who had come from a distance to see the experimental

station at Rothamsted, begged Sir John Lawes to tell them the surest way of succeeding in their business, expecting, of course, to receive some learned information as to manures or the rotation of crops. "Get up early," was the curt, but kindly reply. Sir John, however, did not mean to imply that his own life-work was of no avail as a help to the farmer, but that science will only help those who help themselves; that the farmer must not be like the newspaper writer, who once a year sits down by his bad coal burning in his ill-built grate, to pen an article demanding to know the reason why science has not delivered him from the London fogs. Science, I am afraid, can do little for those who merely want her in order that they themselves may indulge in negligence or sloth: but when those who have proved by their lives that they have acted up to the maxim of getting up early, call for the assistance of science, that assistance should not be denied them.

Before the recent Commission on Fruit Culture there appeared as witnesses several of the most eminent and successful fruit growers in Great Britain, and it is remarkable that one of the points on which they were most unanimous was the pressing need for scientific help in their work; such a cry from such men cannot be neglected, and it is the State alone that can adequately satisfy their needs. So little has been done up to the present, so much leeway has to be made up, the problems are so complicated, and the case is so pressing, that, if we are to maintain our position even in our own markets, it is useless to rely on the chance of the work being undertaken by private benevolence.

The ideal experimental station, indeed, must necessarily be a complicated organism, and calls for the combined assistance of several independent sciences. There must be, to start with, as director and organiser of the experiments, a man who is thoroughly trained in experimental work; he must, of course, be conversant with the practical conditions of fruit culture, but, unless he is an experimentalist by training and education, he will be of no use as director of an experimental station. It cannot be too fully realised that the art of devising experiments—the art of putting questions to nature—and, even more so, the art of interpreting the results when once these are obtained, is just as much a matter of training as that of horticulture or of any other business in life. There is nothing more ridiculous than to imagine that, because a man can grow fruit, or because he can teach horticulture, he can, therefore, carry out experiments in the strict sense of the term. A horticulturist is not necessarily a successful experimentalist, any more than a scientific man is necessarily a successful horticulturist. But just as it is necessary that the experimental work of a station should be conducted by a trained experimentalist, so is it necessary that the practical management of the ground should be in the hands of a trained horticulturist. The ground manager should be a thoroughly experienced and practical man, and it should never be possible for erroneous results to be obtained through lack of cultural ability. Still more absurd is it to suppose that experimental work can be carried out by a committee, even when the members of that committee have some knowledge of such work; a committee may superintend the organisation of a station, and may profitably discuss the results obtained, but investigation

itself always has been, and always will be, the work of the individual, and not of committees.

Under the director of an experimental station there should be, besides the ground manager, workers in at least three different branches of science : the chemist, investigating the problems connected with the composition of soils, of the trees, and of the fruits ; the entomologist, investigating insect pests ; and the mycologist, investigating fungoid diseases. Each of these should have a laboratory in which to carry on his work ; but, in the case of the entomologist and the mycologist, much of the work would have to be done out of doors, and in different parts of the kingdom ; for insects and fungi will not be found so accommodating as to come to the experimental station in order to be studied and exterminated ; they will have to be followed into the plantation which they have attacked, and studied on the scene of their active operations.

It is not, however, in these two branches of science only that the operations of an experimental station should be extended into other parts of the country. In what may be called the department of "cultural experiments"—those on planting, manuring, pruning, and the practical treatment of trees in every respect—extension and repetition in other soils will be requisite. However necessary a central station may be, it must always be remembered (indeed, it is never forgotten by those who seek a cheap method of discrediting the results obtained there) that the conditions of soil, position and climate in one locality can never be reproduced exactly in any other, and that, therefore, the results obtained in one spot *may* be peculiar to the special circumstances prevailing locally, and, consequently, may not be generally applicable.

We must also remember that experiments at a horticultural experiment-station must necessarily be made on a very small scale ; it would be necessary to take many hundreds or thousands of trees for each experiment in order to eliminate effectually the chance peculiarities of the individual trees, and to make horticultural experiments comparable in this respect with agricultural ones ; but an experimental station on such a scale would, in this country at any rate, be out of the question ; and, therefore, the experiments made at the station must always be regarded to a certain extent as preliminary or tentative. The station, in fact, bears the same relation to the fruit industry as does a works-laboratory to a large manufactory. In each of them all sorts of questions are investigated, and all sorts of experiments are made, which could never be made on a large scale without the risk of serious commercial loss, and the dislocation of all routine work. It is only in the case of a small number of the experiments made in a works-laboratory that results are obtained which promise to be of practical value, and it is only after such processes have been thoroughly examined there, that they should be tried on a practical scale in the works themselves. In a precisely similar way, a few only of the results obtained at an experimental station can be expected to lead to results of importance, and these, after having been worked out on an experimental scale, must be submitted to examination on a practical fruit-growing basis.

This, however, does not necessarily imply that the station itself should be possessed of large areas of land in different parts of the country in

which to put its results to the test of practice. There would, I believe, be very little difficulty in finding landlords and fruit growers to aid in a work directed towards their own benefit, by consenting to try some particular form of culture (already shown to be successful on an experimental scale) on a part of their land, and to allow this trial to be made under the superintendence of the authorities of the experimental station.

It must not be understood that I am proposing that rigorous experiments, such as are conducted at the experimental station itself, should be instituted throughout the kingdom: that would involve an amount of superintendence and expense which would be altogether prohibitive. I am only suggesting that any one particular method which promises success, should first be tried experimentally under ordinary practical and, therefore, rough conditions, before its adoption is finally advocated. Many trial grounds of this sort throughout the country would, no doubt, call for a considerable amount of organisation on the part of the experimental station; but the results would, I am confident, amply repay the labour expended, even if we were to set aside the value of the information obtained; for every landowner or fruit grower who devoted a few acres to such work would feel, and rightly so, that he was taking an active part in experimental research, and a network of such plantations throughout the kingdom would do more to develop the spirit of investigation, and the thirst for improvement and progress, than reams of pamphlets and years of preaching.

The rough sketch which I have given of an ideal experimental station must show how far that particular station with which I am myself connected falls short of the ideal. But in establishing the Woburn Experimental Fruit Farm we never professed to satisfy all the wants of the fruit industry, nor to undertake a work which the State alone could efficiently accomplish. We may occasionally have cause to complain that more is expected from us than the performance of our self-imposed task; but we shall feel satisfied if our work has helped to bring into prominence the necessity which exists for experimental work on a larger and more comprehensive scale.

Certain it is that our results have shown that some of even the most elementary and widely accepted views as to horticultural practice require investigation, if not revision; and in illustration of this I propose to allude briefly to the results which we have obtained in three different matters—the effect of grass on trees, the effect of manure on trees, and the factors which are of importance in planting trees.

As to the effect of grass, and, to a lesser extent, of weeds, we can only say that no more effective way, short of violent destruction, exists of injuring a newly-planted tree than to grow grass over its roots, and this fact alone is sufficient to account for all the miserable specimens of trees which are to be found throughout the country in ordinary farm orchards. Figs. 1 and 2 illustrate the effect of grass on dwarf and standard apple trees, respectively; the trees in the grass and in the open soil were precisely similar when planted, and have been treated in a precisely similar manner ever since, except as to the growth of grass. The photographs were taken four years after planting.

As to the grassing-over of trees after they have once been well established and are in active growth, the effect may vary considerably in



FIG. 1.

different soils ; where the soil is shallow, and the tree-roots are very near the surface, and, consequently, near the grass-roots, the effect may be as



FIG. 2.

great as in the case of freshly-planted trees. This is the case at our fruit farm. Figs. 3 and 4 show two rows of Cox's Orange Pippin which

were alike when planted in 1894, and which remained alike under similar treatment till 1898, when those shown in fig. 4 were grassed over.



FIG. 3.



FIG. 4.

The growth of the trees was arrested at once, and they have been going from bad to worse ever since, till now they are all dead or dying.

In other and deeper soils the grassing-over of established trees may

sometimes, as we have found, be adopted with comparative impunity. But there are circumstances which lead us to believe that we have not yet fathomed the whole problem of grass-action, and that a further investigation of it may bring us to some very interesting observations as to root-action. At any rate, we have sufficiently established the necessity for extreme caution in grassing over trees, even in a well-established orchard. Such a step should never be taken without first making a preliminary trial on a portion of it, to ascertain what the effect is likely to be.

The effect of manure on fruit-trees is another matter in which our experiments show that we are at present in a state of considerable



FIG. 5.

ignorance,[†] and that much investigation is still needed. The main feature of these results is to prove that, in the same soil in which manure is of vital importance to one kind of fruit, it may represent so much money thrown away with another kind. With our apple trees, manure, whether artificial or natural, has had practically no effect whatever during the first ten years since planting. The unmanured trees are, as regards growth, vigour and cropping, indistinguishable from those which have been heavily dressed every year; some slight difference may be noticed when we take the mean results of our numerous experiments, but that difference does not amount to more than a few units per cent., and is therefore of a doubtful character.

In fig. 5 is shown a tree which has received no dressing since it was planted in 1894, and in fig. 6 one which has received artificial manure in increasing amounts every year, till now the dressing is equivalent to 120 tons of dung to the acre. Yet the latter shows no superiority over its unmanured neighbour.

We cannot expect, of course, that apple trees will go on growing for an indefinite period even in our soil, without exhausting the available food in the ground. Still less do we conclude that manures will be as ineffectual in all soils as they are in our own: but it is certain that the cost of whatever manure has been given to our apple trees during the past ten or

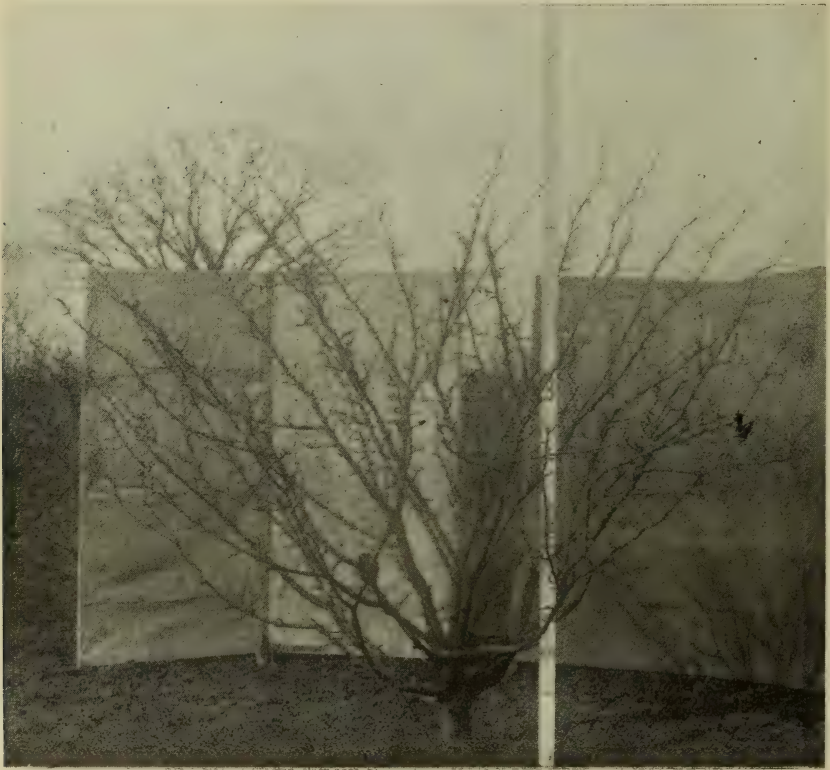


FIG. 6.

eleven years has been money wasted, and I think we may take it as equally certain that ours is not the one exceptional field in England where such a result would be obtained. Indeed, our land is of no exceptional fertility, and it consists of a soil which most growers would consider would be much improved by a good dunging, and the effect of dung on farm crops appears to be the same there as elsewhere.

Contrasted with the absence of effect of manure on apple trees, we find that in the case of gooseberries, currants and raspberries, manure, and especially dung, is of such paramount importance that those plants which have not been dunged have been practically exterminated.

Fig. 7 shows a plot of gooseberries which, during eleven years, has received a dressing of thirty tons of dung to the acre, while fig. 8 *



FIG. 7.



FIG. 8.

* The photograph for fig. 8 was taken at a later time of the year than that for fig. 7, the bushes being whitened in order to render them visible.

shows a precisely similar plot, or rather half-plot, which has received no dressing at all, and, as will be seen, there are now only a few stunted bushes left in it.

The third instance which I shall give of unexpected results in matters of elementary horticultural practice is that obtained in the case of planting a tree carelessly; that is, planting it in untrenched ground, not trimming the roots, huddling the roots together into a small hole, and stamping the earth roughly down upon them. We planted many trees in this way eleven years ago (in order to demonstrate, as we thought, the evils of such malpractice), and though the trees at first showed some slight deficiency in vigour, they soon more than picked up any ground which they had lost, and were found to have grown more than similar trees which had been planted according to all the rules of correct procedure. These results we set aside at first as being impossible. But we repeated them, and repeated them over and over again, always getting similar results, and often of a more emphatic character than at first. In the last ten years several hundred trees have been used in these experiments. The explanation came at last through some experiments in which we had planted some stocks improperly in another respect—namely, by burying their roots two feet below the surface. These also behaved exactly like the trees planted improperly in the manner previously mentioned, and showed more vigorous growth than the properly planted trees. On lifting them the reason became apparent, for it was found that the check given to the original roots of the tree by the maltreatment in planting had been sufficient to prevent these roots from developing properly, but there was sufficient vigour in the tree to force into growth dormant buds in the stem, and these had formed a new root-system, each root of which, never having received any check to its growth by transplanting, grew more vigorously than the old roots, even in the case where these old roots had been placed under the best conditions.

The results are illustrated in figs. 9 and 10. The former shows the roots of a Paradise stock which was planted properly at the usual depth below the surface, the photographs having been taken when it was first planted, and when it was lifted four years later. So far as can be seen, it is only the old roots which have been developed during this time, very few new ones having been formed. Fig. 10 shows similar photographs of a stock which was planted two feet below the surface, and it will be seen that the original roots of the trees have dwindled away, while an entirely new system of roots has been forced into existence higher up the stem, and these have grown so vigorously that they have outstripped the original roots of the properly planted tree, and an increase of branch-growth was the natural consequence.

The idea that improper or careless planting may lead to good results will, doubtless, receive its due meed of adverse criticism, especially at the hands of those who are ever indulging in the unpractical procedure of condemning without trial anything which they believe to be opposed to what they have been taught. But a little consideration will, I think, make horticulturists realise that the production of good results by root-injury in the form of careless planting, introduces no astonishing, or even new principle in fruit-growing, for most of the main cultural operations

on fruit trees consist of what may be termed beneficial injury—an injury to the branches or roots, done in order to develop buds which would otherwise remain dormant, or to modify the development of already existing



FIG. 9.

buds. The transplanting of nursery stock, root-pruning, disbudding, and the various forms of branch-pruning, all come under this category. It is



FIG. 10.

scarcely necessary, however, to point out that in all these cases, and in that of careless planting, too, there is a limit to the extent of the injury which will produce the beneficial results.

The chief objection which is sure to be raised against results obtained at an experimental station, whenever such results clash with any pre-conceived notions, is that they are peculiar to the soil and conditions of the station itself. As a criticism, this is quite safe; for the station must obviously be situated in one particular position, and no two positions can be exactly alike. It would be childish, however, to argue that horticultural and agricultural investigations should not be made because, being of necessity made at one spot, the results can rarely be such as would not be modified in some way under different conditions. The head of an experimental station is not likely to overlook the possible effect of differences in circumstances, or to be backward in seeking to ascertain such an effect, in cases where it is likely to exist.

The three results of which I have given a brief outline afford examples of classes of results of which confirmation in other soils is necessary in very different degrees. As to manures, it is obvious that the requirements of different soils are, or may be, very different, and we do not dream of drawing the conclusion that the effect which manures have in our soil will be necessarily the same everywhere else. One conclusion of a general character can, however, be drawn even from our manurial experiments in the one soil: namely, that the requirements of different kinds of fruit trees are very different; that while apples, for instance, may not feel the want of manure for many years, gooseberries and other bushes, under the same circumstances, will die for the want of it. This, indeed, we have verified in the case of a soil very different from that at Ridgmont—namely, at Harpenden—where we have a chalk formation with several feet of “clay-with-flints” above it. There we have an acre of mixed plantation to which no manure of any sort has been applied for the last eight or ten years, and yet the trees in it are doing as well in every respect as trees could possibly do, though at the same time, the gooseberry bushes have been practically killed off by the absence of manure. To afford a more precise conception of these results, it may be mentioned that when a row of gooseberries in this ground, 450 feet long, were found to be dying six years ago, some young bush trees of Cox’s Orange Pippin were planted within four feet of them, to take their place. The growth of these trees can be estimated by the fact that in one case where measurements were made, it was found that the tree had formed 1,650 feet run of new wood during the present season, besides having borne fairly well. This rampant growth of apples has been taking place on practically the identical spot where gooseberries were dying of hunger.

As to the effect of grass on trees we can have no certain reasons for holding that this effect will or will not differ in different soils, until we have discovered the true mechanism of the action; so our minds must be kept open on the subject, and further investigations should be made. But casual observations elsewhere, and definite experiments at Harpenden, argue strongly that, so far as the grassing-over of young trees immediately after transplanting is concerned, the action is the same in most soils. As regards older trees, the results may vary owing to causes which have already been specified.

With such results as those on careless planting it is difficult, however, to see how they could be influenced by the character of the soil, except to

a very subsidiary extent, and we believe, therefore, that our conclusions from the experiments at Ridgmont must be of general application. Even in such a case, however, repetition in other soils is desirable. It was late in the present year when we obtained a clue to these results, and time has been wanting for any proper repetitions elsewhere. A partial repetition has already been made, but only on a small scale, and only as to one of the items constituting improper planting: namely, that of ramming the tree forcibly into the ground. This was tried at Harpenden in the case of half a dozen two-year-old pear trees, and the ground selected was of an exceptionally heavy and clayey character, where, according to "common experience," excessive stamping of the soil would have been most deleterious, but where, according to the explanation of our results at Ridgmont, such treatment should be favourable for the growth of the trees, for anything which brings the damp soil into close contact with the roots or stems of the trees should favour the starting of the dormant root-buds in them. Alternate trees were planted carefully in the ordinary way, the others being rammed into the ground with a heavy iron rammer. The ramming was so severe that the whole ground round the trees shook like a jelly, and when the trees were lifted two days ago (October 9) the earth round the roots still formed one solid brick-like mass. We had not expected that the effects of this treatment would have become apparent till the second or third year after planting, but, as a matter of fact, they showed themselves soon after growth commenced. The rammed trees, almost from the first, showed their superiority over the properly planted ones, and this superiority went on increasing till, by the end of the season, the length of new wood formed by them was, on the average, two-and-three-quarters as much as that formed by the properly planted trees. But if the advantage is apparent in the growth of the branches it is still more so in that of the roots [the six trees were exhibited to the meeting]; for the new rootlets sent out by the rammed trees must be at least ten- or twenty-fold as numerous as those from the others; and it may confidently be asserted that if the trees had not been lifted till a year or two later, when these roots would have had time to make their effect felt on the trees, the results shown by the branch growth would have been much more considerable than they are at present.

It would be difficult to find a more striking instance than that afforded by these results on planting, of the necessity for investigation, even in matters of the most elementary horticultural practice. No doubt, knowledge would become perfected in time, even if the accumulation of it were left to the chance observations of the practical grower. Much, indeed, has been accumulated in this way, but it is a very slow and expensive process; generations may be necessary, and thousands of pounds may be wasted, before some new fact is discovered, and the knowledge of it disseminated. Properly organised investigation at a station specially fitted for the purpose is now the only way in which new knowledge can be gained with that economy of time and money which is essential to the fruit-growers of England, if they are to hold their own in the present keen competition with other nations.

Mr. Pickering illustrated his paper throughout by means of lantern slides.

Mr. W. A. MacKINNON (late Chief of the Canadian Government Fruit Division): I have to thank you for the courtesy you have extended in inviting me to throw some little light on the Canadian phase of this subject. This is but one more of the long list of similar courtesies which you have extended to us in Canada. We producers of apples have been very keenly interested in our connection with Great Britain and the British market; and it has come to my knowledge that one of your members is at present doing his share in developing the latest phase of the Canadian horticultural industry, viz. the co-operative movement, which is the key to the future of the Canadian fruit industry, and your members who assist us in that movement will have cause some day to be proud. We do not pretend that Great Britain needs our assistance and advice, but we do believe that interchange of knowledge is extremely useful.

Our legislators and growers will be interested in what has recently been planned for the future of the industry in Great Britain. It has been said that agriculturists, as a class, are the slowest to combine, and are most suspicious of each other—slow to offer to each other the results of their investigations, or their successes. It has even been said that in horticultural work—and in many other industries—to assist your neighbour is to betray and injure your own prospects. We think decidedly otherwise. We think we cannot do too much to assist our neighbours. We have come to the belief that to establish a reputation, not by one man's production, but by the production of an entire district, is the right and only way to improve the future of every man in that district.

It may be that the few remarks I have prepared on the subject will not be found sufficiently exhaustive for you. In that case I hope you will communicate with the Canadian Government, when any information they can give will be at your disposal.

In introducing so broad a subject to an audience so thoroughly at home in all matters of horticulture, and already so well informed on the essential principles of experimental effort, it becomes me to avoid generalities, and to deal only with the actual facts of present-day experimental farms in Canada.

It might be best at the outset to explain the official status of this work, and my not too intimate association with it, lest it be assumed that I speak with more authority than is the case. The Fruit Division at Ottawa, of which I was privileged to have charge from its inception till last year, deals primarily with the commercial aspects of the fruit trade. These are of course necessarily and inseparably allied with the earlier phases of the industry, which may be broadly summed up in the expression "orchard management," but the Government work in connection with these two branches has been assigned to separate staffs—those of the Fruit Division, and of the Experimental Farms respectively. Active co-operation is the watchword governing the relations of the two branches, which are both under the immediate direction of the Hon. Sydney Fisher, Minister of Agriculture. As chief of the Fruit Division, therefore, it was from my colleagues of the Experimental Farms, and from occasional visits, that my information concerning those institutions was obtained, and not from any personal experience in their management.

The objects aimed at in the establishment of experimental farms may be described as fourfold. They were at first undoubtedly intended to become bureaus of information, to which farmers might look for disinterested replies to any and all inquiries, and for reliable and practical help in all their difficulties. But the mere knowledge that an experimental farm is available forms a strong encouragement to the entire agricultural community, which is by its means relieved in a great measure from the necessity of learning wisdom solely at the excellent but costly school of experience. Again, the growers' efforts are largely directed by the results of experiments too varied, too vast, and too long-continued to have been carried on by them as individuals; the preparation of the soil, the best varieties to grow, the best methods of cultivating, pruning and harvesting, all are demonstrated before their eyes, by a Government which is not paternal to the extent of doing for people what they might equally well do for themselves.

To understand how these results are obtained, it will be necessary to glance at the organisation and administration of three or four sorts of experimental farms which are to be found in Canada, as follows :

1. Dominion Experimental Farms under the Federal Government, located at Nappan, N.S., Ottawa, Ont. (Headquarters), Indian Head, N.W.T. (now in the Province of Saskatchewan), and Agassiz, B.C. These, it will be seen, cover the entire country in a fairly representative way.

2. Provincial Experimental Farms, under the local Governments, such as those at Guelph, Ont., and Truro, N.S.

(In both the above classes fruit-growing is included with all other branches of farming.)

3. Fruit Experiment Stations, established on private property, under the direction of the Ontario Government, which supervises the work, and publishes the annual reports of the owner, who is always a leading local horticulturist. The stations are devoted to investigating and testing various sorts of fruits, one making a speciality of grapes, another of plums, a third of peaches, and so on.

4. Model Orchards, which have been planted under the direction of the Governments of Nova Scotia and New Brunswick, also on private property, in various parts of the provinces.

Of the last two classes a word may be said hereafter, but meanwhile I shall outline the methods employed in varying degrees at all of these institutions.

First of all comes a series of intelligent experiments, continuous and systematic, though varied with the changing needs of the industry, and covering the whole field of a fruit-grower's work. The following incomplete list of experiments now being conducted at the Central Experimental Farm will no doubt be of some interest :

1. Testing the varieties to determine hardiness, productiveness, and quality of the fruit.

2. The testing of seedling varieties sent in by fruit-growers, and also seedlings raised from the best varieties which fruited at Ottawa, in order to obtain better kinds.

3. The cross-breeding of apples, especially for the purpose of obtaining a late-keeping apple of good quality.

4. The top grafting of the tenderer varieties on hardy stocks to determine which varieties will succeed in that way, which will not when grown as standard trees.

5. The study of the individuality of fruit, or experiments conducted to determine whether individual trees of a variety vary in productiveness. We have found, after six years' work, that there is a great deal of difference in the individual trees of a given variety.

6. The thinning of fruit on the trees.

7. Experiments in close planting to determine whether apples can be grown profitably in this way.

8. Investigations in diseases of fruit.

9. Experiments in spraying with different mixtures and solutions for the prevention of fungous diseases.

10. Different methods of orchard culture.

11. Experiments with different cover crops for orchards.

12. Experimental shipments of fruit.

13. Identification of varieties sent to be named.

To make such experiments of any real value, two things are requisite, in addition to patient persistence in them: namely, scientific accuracy, to ensure uniformity in all conditions except that in respect of which the test is made; and the minutest care in recording results. The work of years may be entirely lost owing to inaccurate records. These essentials, I am safe in saying, are carefully observed by the chief officers—the Horticulturist, the Chemist, and the Entomologist and Botanist—who deal with fruit-growing at our experimental farms.

But it is one thing to collect valuable information, and quite another to put that information before the public in such a way as to be a real help. Let me indicate a few of the channels made use of for this purpose.

Cheap railway excursions are organised, by local or county agricultural societies, for the purpose of visiting the farm and studying the results of various experiments. Such excursions usually take the form of picnics, and make a delightful outing for those who take part in them, besides being of high educational value.

There is, of course, correspondence, for which the mails are absolutely free to all who may desire information from the Central Experimental Farm at Ottawa. That this privilege is freely made use of is apparent from the fact that in the year ending November 30, 1904, no less than 55,366 letters were received at one institution. No bona-fide inquiry is left unanswered, and neither time nor trouble is spared to secure and furnish the desired information.

Second only in importance to personal correspondence is the frequent and free issue of Bulletins by the heads of the respective Divisions, dealing with timely subjects, such as "Apple Culture," in brief synoptical form; again of some particular fruit pest or disease, or spraying compound. Such Bulletins are sent to every person who writes for them, and let it be again noted that neither the publication nor the letter asking for it costs the applicant a farthing.

Finally, the officers of the farms attend as many local and provincial meetings of fruit growers as their duties will permit, and deliver practical addresses, answer questions, mix freely and converse with the growers;

thus devoting all their knowledge, experience, and energy, in spite of the fatigue of travel, late hours and long drives, to the one object of assisting their less well-informed fellow-workers.

One or two more or less exceptional, new, or temporary phases of the work may be mentioned in conclusion. The Horticulturist at Ottawa, for example, has made some experimental shipments of "Wealthy" apples, grown on trees ten feet apart, to the British market. Other varieties were also shipped, some being wrapped in tissue paper, others unwrapped, and much valuable information was thus obtained and published for the benefit of growers without experience in the export trade.

The Fruit Experiment Stations of Ontario show annually at the Toronto Exhibition (which has, I believe, a record of over 100,000 visitors in one day) fine collections of all sorts of fruits, correctly named as to variety. This information alone is of the greatest value to growers, who too often find nursery stock very different from the "nursery tales" on the strength of which they had purchased trees. And there is always an expert in charge of such exhibits, to answer inquiries and give advice to all who ask it.

And here it may be stated that very many fruits are sent annually through the mails (postage free) to Ottawa for identification; also promising seedlings to be tested for quality, and a great variety of blighted leaves, berry-canes, fungus-spotted fruit, scale-infested bark and damaged twigs, with letters asking the cause of the injury, and what remedies or preventives should be used. The value of such work will be fully appreciated by your Society, and indeed it could not well be overestimated. Were there nothing to consider but the cost of the necessary microscopic equipment, it would be utterly impossible for individual growers to make these investigations for themselves.

Finally, we have to glance again at the so-called "Model Orchards," say in Nova Scotia. They are scattered pretty well over the province so as to form a test of the apple-growing possibilities of the various districts, the sites being carefully chosen as to soil, exposure, and drainage. The varieties are selected from amongst those which have been found commercially successful with a view to "covering the season," as it is called—that is, having apples ready for market, one variety following another, from August till March or April. The growing of too many varieties is discouraged. In all operations the goal of commercial success is kept in mind, so that these blocks of thriving, well-cared-for trees are what their name implies, "Model Orchards," which growers in the district may safely strive to duplicate. The minimum of experiment is, in this case, combined with the concrete illustration of sound, proved, business methods. At the other farms experiment predominates, and the learner must inquire what he is to copy, and what avoid; here he has a safe object lesson in all respects, so that he need only make sure that the conditions at his own farm are similar to those of the "Model Orchard." It is the variations in local conditions that make it so necessary to have many models scattered over the country, though the same plan would be dictated by reasons of convenience to enable growers easily to visit and inspect them.

It will be seen from the above outline that our experimental farms

are intended in various ways to inform, encourage, and direct the growers, and to demonstrate practical methods of growing fruit, the essentially commercial nature of the industry being always kept in full view. The farms are spread over the whole Dominion to serve all important districts ; where all branches of agriculture are included, they are carried on together with complete success. Publicity is secured by means of excursions, correspondence, bulletins, and the attendance of officers at such meetings as this ; so that close touch is kept between the officials and the growers, whose paid servants the former cheerfully acknowledge themselves to be, and the entire system of horticultural education is loyally supported by the press, both daily and weekly, in such a manner as to be of incalculable benefit to the fruit-growing community. Such is an imperfect account of some aspects of experimental fruit-farm work in Canada.

Mr. H. F. GETTING (Ross, Herefordshire) : I have been asked to make a few remarks, though I am not an experimentalist, but a fruit grower of quite recent date.

I take it that it is generally admitted that fruit growing, distributing, and marketing are capable of considerable improvement, and that fruit growers require assistance in experimenting. How can we fruit growers be assisted to gain the knowledge to grow the largest crops of the most saleable varieties of clean sound fruit ? Can we, as scattered individuals, without Government help, do so ? I fear not. Growers in America, Canada, and other countries have had willing and practical help from their Governments, and I venture to say the results have warranted it. We are not ungrateful to public-spirited men and women, such as the Duke of Bedford, the late Miss Eleanor Ormerod, and Mr. F. V. Theobald, for helping us, but it is not enough.

Private growers have not the scientific training nor the time, nor, as a rule, the money, to carry on research or experimental work ; though, undoubtedly, fruit growers could, to a limited extent, assist in carrying on some experiments.

The United States of America have, besides other institutions, sixty-three colleges and experimental farms, provided under Acts of Congress, which teach and experiment in agriculture, and most of them in fruit culture. Also a Bureau of Plant Industry, one department of which is specially devoted to pomological investigations, and collecting and disseminating information regarding fruit industry. Canada also has similar institutions. I have read and studied a considerable number of the bulletins issued by them, which have been most courteously sent to me, and I am astounded at the vast amount of really practical information contained in them, and only regret that, in many instances, it is not applicable to this country.

France has its Government schools and experiment stations, some for agriculture and horticulture, and some for horticulture only, Government laboratories, &c., Maintenance scholarships being given to a certain number of pupils.

What has our Government done ? There are county council lecturers on fruit growing, but, with all due deference, they are not the men we want. They are not of the calibre or scientific training that is required

to carry weight. Fruit growers do not want bare statements repeated again and again, without any practical proofs to back them, nor varieties of fruit indiscriminately recommended ; nor washes and treatments advised to destroy insects, which are known by growers to be useless, nor manures for fruits recommended without any basis to go upon. There are agricultural colleges, such as Wye, Reading, &c., which are doing good work, but work on individual lines, and as regards fruit culture they are insufficient, though I think that in a general scheme they might be of great assistance.

A few days back I received a letter from a well-known professor in the United States, who has worked for years at one of their Government experimental stations, and has visited the principal fruit-growing districts in this country. He writes : " I know your situation fairly well, and can say I have never seen a situation in which special work in experimental fruit culture is so badly wanted as in England. There is much fine material lying ready at hand, &c."

Surely our Government should assist ; and if assistance is given, what form should it take to be of real practical service ?—

(1) To the established fruit grower or farmer who grows fruit.

(2) To the intending fruit grower. And, if feasible, to educate a class of men suitable for teaching fruit culture or to assist in the same.

It is essentially a work that should be carried on by the Government, probably by a sub-department of the Board of Agriculture with a Bureau of Information to carefully collect all available material, tabulate and disseminate the same by means of bulletins, and to supply different centres with information which would enable them to answer many inquiries. A central farm of at least fifty acres should be established under a board of management of experienced men. It is of the utmost importance that members of the staff should be practical and thoroughly qualified men of experience : I lay great stress on this.

Again reverting to the members of the staff, I should at least include a botanist, entomologist, chemist, practical fruit grower, and an expert at practical spraying and mixing of washes. I would suggest that this latter member should come from America, as I do not think we have such a man in this country.

It will be absolutely useless unless men with a thorough knowledge of commercial fruit culture are included in the Board of Management, and men of mature experience on the staff, not only in laboratory work, but in practical field work.

The central station should be for research, experiment and demonstration, and if practicable it should also take pupils who can pass a fixed examination. If education be included in the scheme it should be given gratis, and in exceptional cases, maintenance scholarships, as in France. The entomologist and botanist should, at certain seasons of the year, travel in fruit-growing districts, giving notice of such visits, and call on such growers as apply to him ; inspect orchards and advise growers ; hold public meetings, if possible in orchards, and practically demonstrate how to deal with pests. A chemist should also visit fruit districts and advise as to conducting local experiments with manures and deliver addresses.

Then comes the question whether a central fruit station would of itself be sufficient: I think, *decidedly not*.

Elementary horticultural education could better be carried on in each of the fruit-growing districts. Certain trials and experiments, such as best varieties of fruit to grow in different districts, and most suitable manures to use, must be made in different localities and on various soils.

How is this to be met? As already mentioned, we have existing agricultural schools such as Wye, Reading, and others, which are doing good work. These institutions, if they had a special Government grant, might be willing to start or extend a horticultural department, and work in unison with the Central Government Station.

If certain important fruit-growing districts are without such institutions, it would surely be practical for the County Councils, assisted by the Government, to start them. It is indeed a disgrace that three adjoining counties, Herefordshire, Worcestershire, and Gloucestershire, with upwards of 70,000 acres under fruit, have not one such institution within their boundaries, and only contribute small amounts to an institution outside, which, as constituted, is only likely to be of use as regards cider. If Government grants were given to these colleges, no doubt many important experiments could be systematised. Individual fruit growers would probably be willing to carry on certain trials under the guidance of the head experimental station, if financially assisted in doing so. Then again as to the destruction of *pests*. It would be necessary to demonstrate by spraying, &c., how to deal with them. There would be plenty of material at hand on private fruit grounds, but probably not at experimental fruit stations, at all events at first.

If a Government fruit station be started, which I sincerely trust it will, the first important question is, Where should it be? I notice it has been suggested that it should be in the neighbourhood of Oxford or Cambridge, doubtless on account of it being convenient for research work. This smacks too much of the library and laboratory, and, I think, would be a great mistake. It is no doubt desirable that the situation should be as central as possible, but to my mind it is even more important that it should be in one of the large fruit-growing areas.

Situation and soil should be very carefully considered, otherwise experiments and results are likely to be much interfered with. Situation should be sufficiently high to be as free from effects of frost as possible and not unduly exposed to cold winds. Soil also is a very important factor. It is desirable that it should be of as uniform a character as possible—that it should not be of a peculiar nature, such as at the Ridgmont Experimental Station, where manures are stated to be practically useless (at important stations in America and Germany it is shown to be otherwise). Possibly a fairly deep sandy loam would be advantageous in order to obtain results from manures. If soil is rich in available plant food, results of manuring experiments are likely to be misleading. On the other hand, if there is not a sufficiency of lime (present or added) manures will not show full results, or in some cases may prove positively harmful.

It would be a great mistake if too small a piece of land were taken. Probably fifty acres would be none too large. The annual value of the

land would be a small item of the general expenditure. Experiments, to be reliable, should not be on too small a scale. Trees or plants of one variety have their individual differences. Again, if trees, bushes, or plants are not given plenty of room, their roots are likely to intermingle and experiments with manures at once upset. It would be of great advantage if another fifty acres were taken and planted as a demonstration fruit plantation, everything being worked on the most approved and up-to-date principles. After a few years it would pay all expenses and might be made an educational centre, and in any case would be of immense educational value.

Experiments should not be too numerous, but should rather be as few as practicable, and very carefully selected. Experiments with manures and washes, and in planting, pruning, &c., would no doubt be leading ones. Without attempting to indicate what experiments should be carried out, I would suggest that the following might be considered :

1. Different methods of cultivation, so as to arrive at the best and most economic ones (manure trials are likely to be misleading if soil is not properly worked). Implements, not only British, but foreign, should be tested. I notice the disc harrow or cultivator is largely used in American orchards, I believe it is hardly known in this country.

2. Different types of spraying machines should be carefully tested ; many of those used are of too small capacity and power.

3. Improvement of the best and most marketable existing varieties of fruit, rather than adding to their numbers. I do not mean that this should debar the testing of foreign varieties which have proved of exceptional merit.

4. Testing stocks and varieties of trees, &c., not only as regards fruit-bearing, but also as regards hardiness and power to resist disease.

5. Testing of methods in general use. These tests should be as much in accord with the general practices as possible. For example, in testing apples grown with grass underneath against apples in cultivated land, to my mind, to make the test complete, the grass should be grazed with cake-fed sheep.

6. Trials with different cover crops for green manuring or feeding off. Cover crops are greatly in vogue in American orchards.

7. Storage experiments and trials. We are very badly off in England as regards really well-arranged stores ; and as regards cold storage of home-grown fruit, practically nothing is done. Look at the advantages which might be secured, in case of a period of glut, by the extension of the period for selling some of the best varieties. Now we do not benefit from an abundant harvest.

We are recommended to grow larger quantities of a variety—though some of us do grow more than ten bushels of a variety, the quantity Mr. George Monro stated before the Departmental Committee he could hardly get. If we grow a quantity of a variety, how are we to keep the same on the market for weeks without cold storage ?

If America had remained asleep on these questions, how could she have developed her immense foreign fruit trade ? And they are still experimenting, even now not content with the extent of our market which they have already captured.

8. Experiments in improving old orchards. Some remarkable results have been achieved abroad in this direction, though in some cases it would be wisest to remove the old trees.

9. Little or nothing is known in England (or at all events scientific men have not told us) as to which varieties of apples have blossoms which are self-fertile. Ignorance on this point undoubtedly affects the crops.

I might continue these suggestions and put forward what America has done, but I think I have said enough. Before concluding, however, I should like to allude to one more important point.

The question is sure to arise: If the Government is advised to do all this for fruit culture, why should it not do the same for agriculture? I take it this question could only arise as regards the Central Experimental Station. I will give a few reasons, to which many others could no doubt be added.

Systematic agricultural experiments and trials have been carried on for a great number of years, notably at the Lawes and Gilbert Farm, and there is a large amount of accumulated knowledge. British farmers can, I believe, grow as large crops of cereals to the acre as in any part of the world. Fruit-growing trials and experiments have only been tested on an extremely limited scale, and for a very short period, and almost entirely by unaided private enterprise.

The area under corn crops has enormously decreased—from 1888 to 1904 by about 1,200,000 acres, and under present fiscal conditions is likely to continue decreasing. Fruit growing, notwithstanding the lack of knowledge, has up to the present, for the last thirty years, largely increased—over 60 per cent. in that period is no mean increase—but if the increase is to continue with advantage to the growers and to the nation, the quality, size, and condition of fruit placed on the markets must be improved.

The capital and labour employed on a given area are immensely greater in fruit culture than in agriculture. The difficulties and risks of fruit culture are greater than those of agriculture. Look what a single night's frost may do; and there is no planting a fresh crop.

From a health point of view, a good supply of sound wholesome fruit is of the greatest importance, particularly as increasing numbers of our population are employed at sedentary occupations. No country can supply us with equally fresh, wholesome, juicy fruit, of the hardy varieties, as can be grown in our own country.

The young Britisher who intends to follow agriculture is constrained in the majority of cases to turn his attention to the Colonies or abroad, and then most of his knowledge must be acquired in the land he migrates to. In fruit culture, if the right kind of fruit is well grown and well marketed, I firmly believe there is room for many young Britishers at home.

These are some of the reasons why the fruit grower should be shown special consideration by the Government, and I trust before many months are over that the British Government will have favourably considered the question and decided to assist fruit growers in their exceedingly difficult task.

Mr. GEORGE BUNYARD: We have listened to some most interesting

papers, but I must say that the experiments carried out at the Woburn Farm by Mr. Spencer Pickering have knocked the wind out of me as an old nurseryman, they having gone entirely against all the principles which we have been advocating for the last fifty years. Still, while I am not too old to learn, I should be afraid and unwilling to advise the planting of trees in the way described at Woburn. At the same time there is no doubt that from those different experiments we may learn a great deal; yet I must confess that this is quite different from anything I have ever heard of or experienced during the long time I have been connected with the nursery business. I should say, as an old nurseryman—and I do not stand alone in this particular—we are continually trying experiments, and our object has been, within the last fifty years, to improve varieties. I do not think we want to go back upon old varieties which are obsolete. What we want is to move forward, to find a better variety to replace the old one. We have grown many old varieties; the ‘Keswick Codling,’ the ‘Improved Keswick Codling,’ ‘Golden Knob’ have gone completely out of cultivation, ‘Wellingtons’ are now quite superseded by ‘Bramley Seedlings’ and ‘Newton Wonder.’ It is not our wish to cultivate so many sorts, but we nurserymen exist to make a living, and we must consequently cater for our customers. We are anxious to get rid of many varieties. But when a man comes to you and asks you for a variety, and you do not grow it, he considers you are behind the times, and he goes off elsewhere for what he requires. There are, I might mention, in my opinion, twenty new apples recently introduced that will never make a name, but at the same time we are obliged to grow them.

As regards grass in orchards, the old system has been to plant on pasture, farmers saying that in this way they had a chance of three crops—wool, mutton, and fruit. That may be all right; but there is no doubt whatever that grass takes out of the soil an enormous amount of nutriment, and if you do not return it in the shape of manure, you impoverish the soil in a marked degree; and orchards made on arable land become profitable much sooner. As to cover crops, I do not think we have done much in that way in Kent. As to what our Canadian friend said, I would remark that in his country they do not have to deal with orchards a hundred years old. Yet it is wonderful how some of these old orchards will respond to liberal treatment. If they will not it is better to destroy the trees. I think we have much to learn about cross-fertilisation. As regards a central experimental station, I should be very pleased to avail myself of any information which might be gained from such a station, though I believe every nurseryman—every fruit nurseryman worthy of the name—has his own experimental station in his nursery.

We are trying to reduce the numbers of varieties in all fruits, but the remarks I made the other day were only intended as a guide to those who are going in for commercial fruit growing. Mr. Cheal and myself purposely only mentioned a few sorts, but the difficulty is much greater than many persons are aware of, because of the difference in soils and localities.*

* Since the Fruit Conference was concluded Mr. George Bunyard writes saying that the results obtained by Mr. Pickering at Ridgmont, as far as planting fruit trees is concerned, are so very different to what might have been expected, and are so

Mr. CHEAL : I went through some experimental farms in Canada, and I can bear out much that Mr. MacKinnon has said about their value to cultivators in general. I think we may learn much from young Canada. Ever since I came home I have advocated the desirability of having experimental farms, or gardens where results could be carefully recorded, and information given to all who desired it. I have been particularly interested in the discussion, as showing not so much what we ought to do as what we ought not to do. As to the grass under trees, it is not stated whether it should be allowed to grow to its full extent, or whether it should be mowed. This would have given us some idea as to the bad results of grass compared with cultivated land. It strikes me it might have been due to the extraordinary radiation from grass compared with cultivated land. I do not know whether there are any here particularly acquainted with the results of radiation. I have in my own experiments found between cultivated land and grass land a difference, not only in the evening but through the night, of from 6 to 8 and 9 degrees. I think if that is the case it plainly shows that it is not for the want of manure, but because one is warmer than the other. The difference of six degrees on the surface of the ground must be an immense advantage to those trees that are not covered with grass. I think, therefore, it would have been most important if Mr. Pickering could have made some experiments in this respect, as they would have shown more clearly why the trees which he has been kind enough to show us did so badly under grass.

Mr. PICKERING : You will find all the data. Eleven degrees was the maximum difference.

Mr. CECIL HOOPER : What should be the size of these experimental orchards? It would often be of great assistance, at any rate to small farmers, to have experimental demonstrations in spraying for different pests.

Mr. MARTIN (Toddington Orchard Co., Glos.) : We are experimenting daily, but I maintain that we are at present like gleaners, picking up every straw of information from our neighbours, and we do not get anything like enough. When these experimental stations are started I hope there will be one in Gloucestershire.

The CHAIRMAN : Several members would like to hear about your experiments in attacking and defeating frosts?

Mr. MARTIN : Our experiments are not yet complete. As usual, we must go to America. In California, where they have frosts which kill not only the crops but the trees, they place 100 specially constructed lamps to the acre. Each lamp holds a gallon of oil and burns four hours, and one-third of the lamps are lighted at a time. I experimented on one acre this year when I found there was a 9-degrees frost. I raised the temperature

contrary to the generally accepted views on this subject, that he wishes to offer the following suggestions as an explanation of these very unusual results. Mr. George Bunyard says : "The Pears were on the Quince stock (Apples on the Paradise stock would be under similar conditions). These two stocks have the power of forming roots at the nodes, or eyes on their stems, and possibly, as in Mr. Pickering's case, could exist and flourish; but had the Pears been on the free stock, and the Apples on the crab stock, the probability is that they would have died, as these are budded one foot from the soil, and have not the power that the Quince and Paradise stocks have of reproducing roots. Therefore it is best to advise planters to adhere to the recognised system."—EDITOR.

to 1 degree above freezing—a rise of 10 degrees—and the fruit was entirely saved from the frost that night at a cost of 30s. The greatest damage to fruit this year has not been so much from frost as cold winds.

Mr. PICKERING: Would it be due to the smoke created by the lamps?

Mr. MARTIN: No, owing to the heat alone. A current of warm air was created between the trees.

The CHAIRMAN: From all we have heard there is ample room for careful experiment. I think the commercial growers here are quite able to make a very good commencement in the way of experiment. I hope, and devoutly wish too, to see a sub-department of the Board of Agriculture created in order to further this particular industry. Mr. Getting has asked why fruit culture is to have any advantage over agriculture. Agriculture has arrived at a much more advanced stage of knowledge, whereas fruit culture is still in its infancy, and there is not so much money in these days in the agricultural world for the purpose of experiment as there used to be some sixty years ago.

In conclusion, I am sure we shall all wish to congratulate the Royal Horticultural Society on the excellent Conference we have had during the last three days, and to thank the officials of the Society for the very excellent arrangements they have made—which, of course, is one of the secrets of the success of the Conference.

A hearty vote of thanks to the Chairman, proposed by Mr. Bunyard, was carried, and the Conference ended.

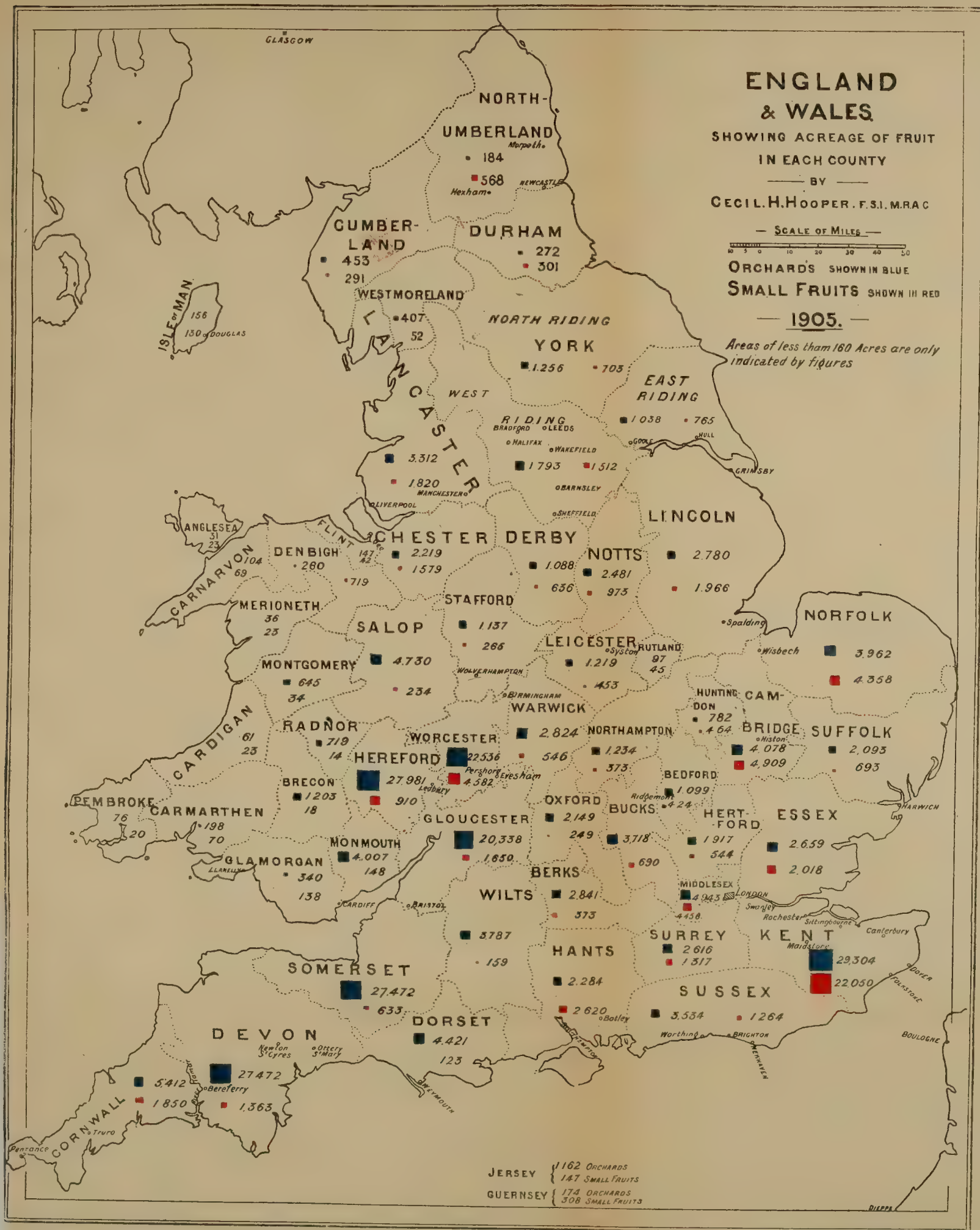
TABLE OF THE ACREAGE UNDER FRUIT CULTIVATION IN ENGLAND, WALES, AND SCOTLAND.

THE following table and map are inserted with a view of showing the area of land in England and Wales under cultivation either as orchards or for growing small fruit.

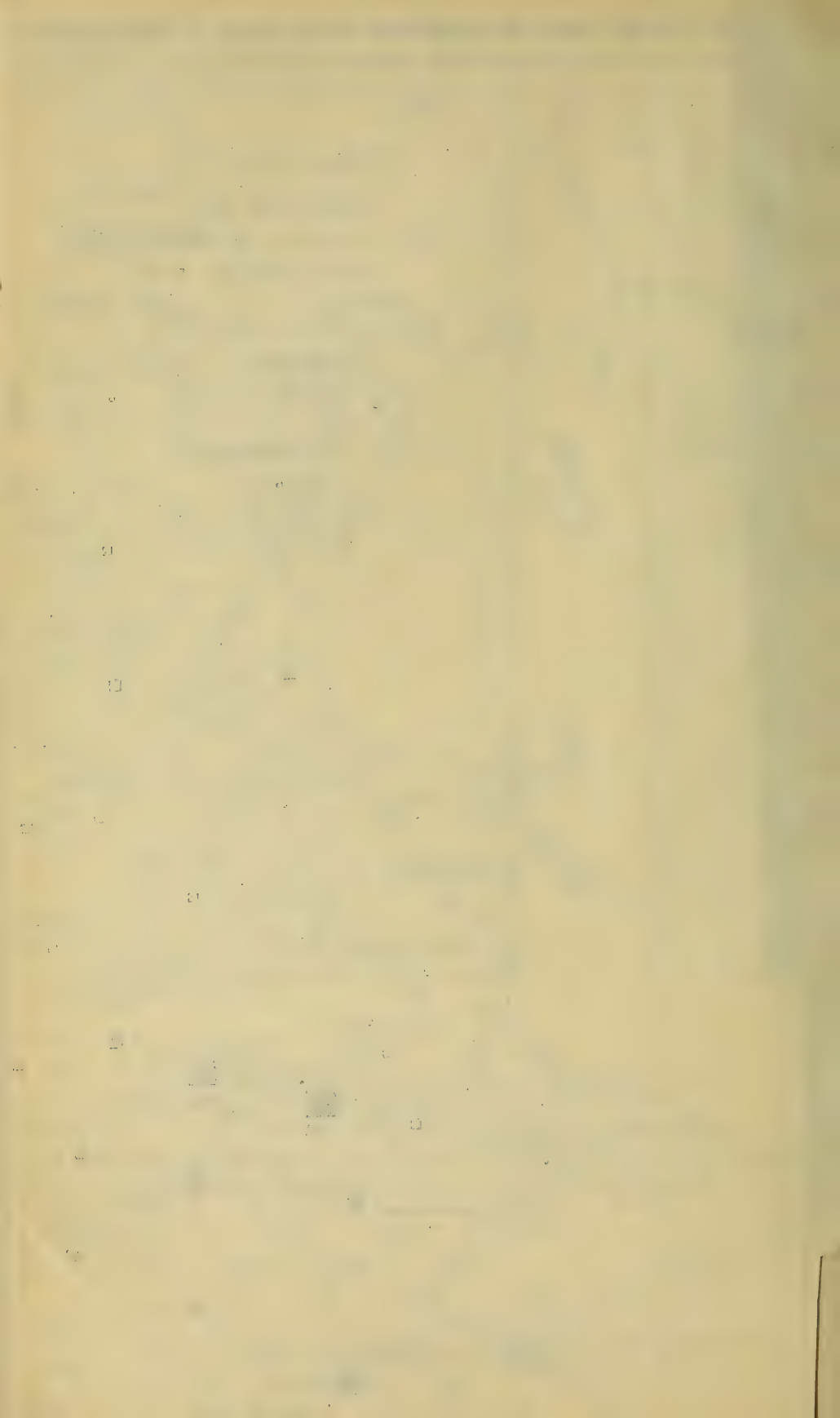
The table is from the Returns of the Board of Agriculture for 1905. Both it and the map were kindly supplied by Mr. E. H. Hooper.

Counties	Land	Or- chards	Small Fruit	Counties	Land	Or- chards	Small Fruit
ENGLAND							
Bedfordshire . . .	acres 301,835	acres 1,099	acres 424	Westmorland . . .	acres 497,100	acres 407	acres 52
Berkshire . . .	459,403	2,841	373	Wiltshire . . .	861,366	3,787	159
Buckinghamshire . .	477,307	3,718	690	Worcestershire . . .	476,710	22,536	4,582
Cambridgeshire . . .	551,466	4,078	4,909	Yorkshire, E. Riding	751,890	1,028	765
Cheshire . . .	647,816	2,219	1,579	„ N. Riding	1,357,525	1,256	703
Cornwall . . .	866,250	5,412	1,850	„ W. Riding	1,760,623	1,793	1,512
Cumberland . . .	961,544	453	291				
Derbyshire . . .	646,412	1,088	636	England—Total	32,382,439	238,021	71,119
Devonshire . . .	1,666,839	27,472	1,363				
Dorsetshire . . .	624,031	4,421	123	WALES			
Durham . . .	645,926	272	301	Anglesey . . .	175,695	31	23
Essex . . .	976,125	2,659	2,018	Brecknockshire . . .	466,456	1,203	18
Gloucestershire . . .	803,260	20,338	1,650	Cardiganshire . . .	441,086	61	23
Hampshire . . .	1,048,808	2,284	2,620	Cararthenshire . . .	585,113	198	70
Herefordshire . . .	536,071	27,981	910	Carnarvonshire . . .	362,277	104	69
Hertfordshire . . .	402,856	1,917	544	Denbighshire . . .	424,378	260	719
Huntingdonshire . . .	233,221	782	464	Flintshire . . .	162,448	147	42
Kent . . .	973,846	29,304	22,050	Glamorganshire . . .	514,995	340	138
Lancashire . . .	1,188,048	3,312	1,820	Merionethshire . . .	418,475	36	23
Leicestershire . . .	530,642	1,219	453	Montgomeryshire . . .	505,738	645	54
Lincolnshire . . .	1,691,793	2,780	1,966	Pembrokeshire . . .	392,170	76	20
London . . .	73,962	169	190	Radnorshire . . .	299,793	719	14
Middlesex . . .	147,007	4,943	4,456				
Monmouthshire . . .	347,600	4,007	148	Total for Wales	4,748,624	3,820	1,213
Norfolk . . .	1,307,188	3,962	4,358				
Northamptonshire . .	636,123	1,234	373	Total for Scotland	19,069,421	2,482	6,493
Northumberland . . .	1,284,189	184	568				
Nottinghamshire . . .	536,697	2,481	973	Total for Great Britain	56,200,558	244,323	78,825
Oxfordshire . . .	478,112	2,149	249				
Rutlandshire . . .	97,087	97	45	Isle of Man . . .	140,986	156	130
Shropshire . . .	856,623	4,730	234	Jersey . . .	*—	1,162	147
Somersetshire . . .	1,035,145	25,405	633	Guernsey, &c. . .	15,750	174	308
Staffordshire . . .	738,555	1,137	265				
Suffolk . . .	946,011	2,093	693				
Surrey . . .	458,908	2,616	1,317				
Sussex . . .	929,319	3,534	1,264				
Warwickshire . . .	576,200	2,824	546				

* Not separately distinguished.



NOTE.—640 acres equal to 1 square mile.
Ports at which Fruits enter and Towns with Fruit Markets shown in small capital letters, thus—MANCHESTER.
Important Fruit Growing Centres, thus—Evesham.



VARIETIES OF FRUITS

(1906 EDITION, REVISED)

RECOMMENDED BY THE ROYAL HORTICULTURAL SOCIETY.

APPLICATION being constantly made to the Society to recommend varieties of fruits, cottagers, the owners of small gardens, and farmers are advised to consult the following list before planting. Only those varieties have been included which are considered to possess the four most necessary characteristics of quality, fertility, good growth, and hardiness; and such short notes as appeared desirable have been attached.

W. WILKS, *Secretary*.

NOTE.

(i) The lists are arranged as far as possible in order of ripening, not in order of merit.

(ii) Before deciding which variety to choose read the whole list through carefully with the notes.

(iii) The dates following the names indicate the season at which the particular variety is usually ready for use; it may, of course, be earlier or later; it will certainly vary slightly with each varying year, and will be somewhat later in the North of England than in the South and West.

APPLES.

Compact Growers may be planted, as bushes, 8 feet apart; as low standards, 15 feet apart; or high standards, 18 feet apart.

Medium Growers, as bushes, 10 feet apart; as standards, 24 feet.

Free and Strong Growers, as bushes, 12 feet; as standards, 30 feet.

Bush trees may, if desired, be planted twice as thickly as advised above, and when they become at all crowded half of them can be carefully taken up and replanted elsewhere.

APPLES FOR COOKING.

I.—VARIETIES SUITABLE FOR GARDENS, AS BUSHES ON PARADISE STOCK, OR AS HALF-STANDARDS ON CRAB STOCK.

1. Early White Transparent. August. Compact grower; healthy and productive. It is also an excellent eating Apple for those who like a brisk, sub-acid fruit.

2. Lord Grosvenor. September. Strong sturdy grower.

3. Emneth Early (Early Victoria). Early September. A good grower and splendid bearer. Makes a beautiful bush-tree.

4. Potts' Seedling. September. Compact grower. Succeeds well in towns.

5. Stirling Castle. October. Compact grower; pendulous.

6. Golden Spire. October and November. Compact upright grower.

7. New Hawthornden. November. Medium spreading grower.

8. Golden Noble. September to December. Fruit large; quality excellent; very free bearer.

9. Warner's King. October to December. Tree rather straggling, but fruit very large, and a constant bearer.

10. Beauty of Kent. November to January. A constant bearer of handsome and fine fruit.

11. Bismarck. December and January. Medium grower.

12. Bramley's Seedling. December to March. Strong grower.

N.B.—For a bush it *must* be on Paradise stock.

13. Prince Albert. January and February. Compact pendulous grower. Best as a bush.

14. Newton Wonder. February and March. Free grower. Keeps well. A grand Apple.

II.—VARIETIES SUITABLE FOR STANDARDS AND ORCHARD TREES, ON CRAB STOCK.

1. Duchess of Oldenburg. August. Free upright grower. Will not keep long.

2. Ecklinville. September. Free grower.

3. Grenadier. September. Compact grower. Free bearer.

4. Cox's Pomona. October and November. Compact grower, and a good cooker.

5. Warner's King. November. See above.

6. Lord Derby. November. Medium upright grower. Better in South of England than in the North.

7. Alfriston. January to March. Free grower. Also good as a bush on Paradise stock.

8. Bramley's Seedling. See above. A very good Apple and well suited to graft on feeble trees of inferior varieties.

9. Newton Wonder. See above.

10. Dumelow's Seedling (syns. Wellington and Normanton Wonder). February to April. Medium grower. Productive, but prone to canker.

APPLES FOR EATING.

I.—VARIETIES SUITABLE FOR GARDENS, AS BUSHES ON PARADISE STOCK, OR AS HALF-STANDARDS ON CRAB STOCK.

1. Mr. Gladstone. August. Compact grower. Very short keeper.

{ Irish Peach. Late August. Medium grower. Bears on the tips.
Or

2. { Lady Sudeley. August and September. Medium grower. A very
handsome fruit.

3. Devonshire Quarrenden. August and September. Medium grower.

4. Worcester Pearmain. September. Free upright grower. A good market Apple, because of its colour.

5. James Grieve. September and October. Free grower. A very fine Apple, resembling Cox's Orange in flavour, but earlier. A good bearer.

6. Allington Pippin. October to December. Resembles, but is harder and more vigorous than, 'Cox's Orange,' but of not quite equal flavour.

7. Cox's Orange. October to January. Medium grower. The finest English eating Apple.

8. Scarlet Nonpareil. December and January. Medium grower.

9. Lord Hindlip. January to April. Medium upright grower. The best late dessert Apple, and a fair bearer.

10. Duke of Devonshire. February and March. Compact grower.

NOTE.—Ribston Pippin is not mentioned, because the tree is prone to canker. Many would prefer Margil, which has a rich Ribston flavour, is a compact grower, and ripens in November.

II.—VARIETIES SUITABLE FOR STANDARDS AND ORCHARD TREES, ON CRAB STOCK.

1. Devonshire Quarrenden. See above.

2. Worcester Pearmain. See above.

3. James Grieve. See above. Makes a good standard.

4. Cox's Orange. See above. Not as a standard in the North.

5. Blenheim Orange. November to January. Strong grower. An excellent Apple; also cooking fairly well; but slow in coming into bearing.

6. Gascoyne's Scarlet. December and January. Strong grower. It may also be used earlier in the year for cooking.

Almost all eating Apples cook fairly well before they are quite ripe.

PEARS.

Pears may be planted at distances advised for Apples of *medium* growth; they prefer strong, warm or well-drained soil.

PEARS FOR EATING.

I.—VARIETIES SUITABLE FOR BUSHES, ON QUINCE STOCK.

1. Bon Chrétien (Williams). September. Medium grower. Will not keep long.

2. Louise Bonne of Jersey. October. Compact grower. Excellent flavour; very juicy.

3. Beurré Fouquieray. October. Compact grower. Wonderfully fertile, and very hardy.

4. Beurré Hardy. October and November. Strong grower. Excellent flavour and quality; very sweet.

5. Pitmaston Duchess. October and November. The largest of all. Very strong grower. Fair flavour. Very good stewed.

6. Comte de Lamy. October. Free grower. Small, but very fertile, and of delicious flavour.

7. Durondeau. October and November. Medium grower. Very juicy; brisk sub-acid flavour.

8. Doyenné du Comice. October and November. See Wall Pears. May be grown as a bush in warm situations.

9. Émile d'Heyst. November. Strong grower. Very juicy, and of excellent quality and flavour. A very fine Pear and a good bearer.

10. *Joséphine de Malines*. January. Free grower. May be grown as a bush in the south, elsewhere on walls. Does well on light soils.

NOTE.—As a rule Pears are not very profitable for cottagers and small farmers to grow, but if they are required the above are very good. 'Fertility' is a very free-bearing September market Pear of medium growth.

II.—VARIETIES SUITABLE FOR ESPALIERS, WALLS, OR FENCES, ON QUINCE STOCK.

1. *Madame Treyve*. September. Medium grower, great bearer, and of very fair flavour.

2. *Souvenir du Congrès*. Mid-September. Like a very large *Bon Chrétien*. Excellent for fence or espalier.

3. *Fondante d'Automne*. Early October. Good bearer. Upright grower. Very sweet and rich. Must be eaten quickly.

4. *Louise Bonne of Jersey*. For fence or espalier. See above.

5. *Beurré Superfin*. October. Small grower. Very juicy and of fine flavour and quality.

6. *Durondeau*. See above.

7. *Doyenné du Comice*. October and November. Medium grower, of marvellous quality, sweetness, and flavour. The finest of Pears.

8. *Émile d'Heyst*. See above.

9. *Winter Nelis*. December. Small grower. Very juicy and sweet.

10. *Nouvelle Fulvie*. December and January. Medium grower. Rough in shape, but of very fine flavour and quality for so late a Pear.

11. *Joséphine de Malines*. See above.

12. *Glou Morceau*. December. A good grower and free bearer. Will succeed on a north or east wall.

13. *Easter Beurré*. January and February. Medium grower.

III.—VARIETIES SUITABLE FOR STANDARDS, ON PEAR STOCK.

1. *Bon Chrétien* (Williams). See above.

2. *Beurré d'Amanlis*. September and October. Free grower. Fair flavour.

3. *Doyenné Boussoch*. October. Free, vigorous grower. Fruit large and of fair flavour. Good for market.

4. *Louise Bonne of Jersey*. See above.

5. *Beurré Grey*. October. Free grower. Very profitable. A fine subject for park planting, attaining a height of 50 to 60 feet.

6. *Pitmaston Duchess*. See above.

7. *Émile d'Heyst*. See above.

IV.—VARIETIES SUITABLE FOR COOKING, ON PEAR STOCK.

1. *Pitmaston Duchess*. See above. The finest of all Pears for stewing and bottling.

2. *Beurré Clairgeau*. November. Very strong grower. Like *Pitmaston Duchess*. Sometimes fit for dessert.

3. Catillac. January and February. Free grower. Bush or standard. Should be allowed to hang on the tree late.

4. Verulam. February and March. The tree attains a great size as a standard ; the fruit should hang till November.

PLUMS.

Plums may be planted at distances advised for Apples of *medium* growth.

Lime and old mortar rubbish are particularly good for Plums.

All the Plums are recommended as standards unless otherwise noted.

Plums do well in pots, but as small restricted bush trees in the open ground they are, as a rule, unsuccessful, unless rootpruned every other year in October.

PLUMS FOR EATING.

1. Belgian Purple. Late August. Compact grower. Dark purplish-red ; a great bearer ; also cooks well.

2. Denniston's Superb. Early September. Very free bearer and of fine flavour.

3. Early Transparent Gage. Early September. Strong but close grower. Green ; the finest early dessert Plum ; succeeds best on wall or fence. This must not be confused with 'Transparent' or with 'Late Transparent,' which are distinct varieties.

4. Jefferson. September. Compact grower. Greenish-yellow ; a large and fine Plum.

5. Count Althann's Gage. September. A great bearer and of good flavour.

6. Bryanston Gage. Mid-September. Medium grower. Green ; fine flavour ; better on wall, but succeeds as a standard in warm soils.

7. Coe's Golden Drop. Late September. Slender grower. Yellow ; will hang for a long time after ripe and improve in richness of flavour, but, save in very exceptional positions, must have a wall.

PLUMS FOR COOKING.

1. Early Prolific. Early August. Spreading, drooping tree. Purple ; the most valuable early Plum ; of superb flavour when cooked. Best as a half-standard.

2. Gisborne's. August. A strong-growing yellow Plum of the Pershore type, but of better quality.

3. The Czar. Mid-August. Strong, upright grower. Dark purple-red ; a good bearer.

4. Victoria. Late August. Medium grower of spreading habit. Pink ; an enormous bearer ; the best for general purposes, but has little flavour, especially on a wall.

5. Belle de Louvain. Early September. A strong grower. Very large, oval, dark red ; a great bearer.

6. Pond's Seedling. Mid-September. Strong, compact grower. large ; red ; a good bearer.

7. Monarch. End of September. Robust grower. Black ; large ; the best late Plum.

DAMSONS.

1. Bradley's King. September. A strong grower; early and free bearer. Medium size; oval; excellent flavour.

2. Crittenden's (syns. Cluster, Farleigh Prolific). Mid-September. Medium grower. Small, hardy, very prolific, but not of first-rate quality.

3. The Prune Damson. Late September. Free pendulous grower; large leaves and oval fruit. It is sometimes called the 'Shropshire' and the 'Cheshire' Damson.

4. The Langley Bullace. October. Very large, deep black fruit, of excellent flavour, and a wonderful bearer. A grand addition to our late Plums.

NOTE.—Damsons as standards might far oftener be planted with considerable profit, as shelter, or in hedgerows, than is now the case.

CHERRIES.

Cherries should be planted at distances advised for Apples of *free* growth. All those mentioned are suitable for standards.

CHERRIES FOR EATING.

1. Early Rivers. Very early. Free pendulous grower. Black. A magnificent Cherry in every respect.

2. May Duke. Early. Very hardy and a free bearer.

3. Old Black Heart. Early. Medium grower.

4. Black Eagle. Mid-season. Strong grower. Black. Hardy. Fine flavour.

5. Kent Bigarreau or Amber Heart. Mid-season. Free grower. Yellow; red cheek. Forms a large tree.

6. Bigarreau Napoléon. Late. Free grower. Yellow; red cheek. Hardy. Very fine.

CHERRIES FOR COOKING.

1. Kentish. Mid-season. Strong grower. Bright red; very juicy; of the finest flavour. The Flemish Cherry is almost as good, but is a little later. Kentish has a *very* short stalk; Flemish a long one.

2. Large Morello. Late. Slender grower. Deep red. Very useful for training on north walls, where few fruits do well. This Morello can be planted as a bush where it fruits freely. For half-standards the Wye Morello succeeds better in most districts; it has much smaller fruit than the true Morello, but is equally rich in flavour.

RASPBERRIES.

1. Superlative. Best for general purposes.

2. Hornet. Large and sweet.

3. Baumforth's Seedling. A large round variety.

CURRENTS.

1. Knight's Sweet. Early red.
2. Raby Castle. Late red. Largest bearer and strongest grower.
3. White Dutch. White.
4. Baldwin's or Carter's Champion. Black. Great bearer. Very subject to mite.
5. Lee's Prolific. Black. Best for light soils. Less subject to mite.
6. Boskoop Giant. Black. The largest berry, bunch, and crop.

GOOSEBERRIES.

- | | |
|-------------------------|----------------------------|
| 1. Crown Bob. G. D. | 7. Leader. D. |
| 2. Broom Girl. D. | 8. Red Champagne. D. |
| 3. Dan's Mistake. G. D. | 9. Warrington. D. |
| 4. Yellow Champagne. D. | 10. Whitesmith. D. |
| 5. Keepsake. G. | 11. Whinham's Industry. G. |
| 6. Lancashire Lad. G. | 12. Langley Gage. D. |
| 13. Langley Beauty. D. | |

NOTE.—All Gooseberries may be used green for cooking, and it is well to thin the dessert varieties for this purpose. Those which are best suited for cooking, either green or ripe, are marked with a G; those of best flavour when ripe, with a D.

STRAWBERRIES.

1. Royal Sovereign. The best early.
2. President. Free-bearing and good flavour. Mid-season.
3. Sir Joseph Paxton. The chief market variety.
4. Givons Late Prolific. The best late Strawberry.

NOTES ON PLANTING.

The best months for planting bushes and trees are the end of October, November, February, and the first half of March. Just digging a hole, cramming the roots in, shovelling the soil over, stamping it down, and leaving it, is *the wrong way to plant*, and can only result in failure.

The right way is :

(i) Never let trees lie about with their roots exposed to the air. If several have to be planted lay the roots in the ground first, and then plant at your leisure.

(ii) Open a hole at least 1 foot broader than the roots cover. Throw out the top spit, then well break up the bottom to the full depth of a fork or spade, replace some of the finer soil in a mound in the centre of the hole, and set the tree upon it.

(iii) If the roots are in any way jagged or torn, cut the ends cleanly off with a sharp knife from the under side, and shorten back all downward roots.

(iv) Place the tree in position at such a depth that when the planting is finished it will be at the same depth as it was in the nursery, which will be seen by the soil mark on the stem. The

depth should be such that the upper roots will be about 3 or 4 inches below the surface when finished.

(v) The roots will generally be found to be growing from several parts of the stem. Spread out the lowest roots carefully on the mound, and scatter a little fine earth over them ; then spread out the roots next above these, adding more soil ; then those above them, and so on, giving a small shake now and then to let the soil run in between the fine roots.

(vi) When all the roots are spread out and covered, add a little more soil and tread in firmly (not hard), and fill up slightly above the surrounding soil, as it will sink one or two inches.

(vii) Give one good watering—unless the soil be very damp.

(viii) Put a strong stake to the tree, and be sure the two are fastened together in such a way as to make it impossible for the stem of the tree to chafe itself against the stake when the winds blow. If two stakes can be used it is better.

(ix) Protect the trees from rabbits, cattle, and sheep.

(x) As soon as the land is dry enough in spring, hoe the surface to prevent evaporation. Constant hoeing is one great secret of success in fruit-growing. No drought will hurt trees that are hoed every ten days. In America fruit-growers hoe once a week.

It is impossible to exaggerate the importance of all the above details of planting.

If the natural soil is very poor, a little better garden soil may be brought for (v), shaking it amongst the roots, just to give the tree a good start ; no dung whatever should be placed in contact with the roots, but a thin layer over the surface when the planting is done will be helpful.

It is very important not to plant too deeply (iv), especially in wet or heavy land. In very wet land plant the trees almost on the surface, and mound the earth up over the roots.

It is very important to spread out *all* the roots down to the smallest fibres (v), and none should be allowed to take a directly downward direction, but every one ought to be duly spread out, slanting very slightly downwards from the point at which they grow out of the stem.

It is very important that the soil should not be left loose about the stem and roots (vi), but firm treading does not mean hard ramming.

It is very important to fill up the hole 2 or 3 inches above the general ground level (vi), and not leave a hollow for water to collect in and become stagnant round the stem.

It is very important to stake trees (viii) firmly, so that the roots are not strained by the wind ; but better not stake at all than so as to let the stake chafe through the bark.

It is better to lay the trees in, covering the roots well up with soil, for a time, than to plant when the ground is in a wet, sticky condition, or during frosty weather.

No turf should be laid over the roots of newly-planted trees, but keep the ground clean from weeds, and lightly stir it at intervals for two years all over the surface 1 or 2 inches deep, to admit sun and air.

The purchase of trees at markets and auctions cannot be recommended.

They may or may not be true to name, but their roots are almost unavoidably considerably dried.

Strawberries.—Strawberries should be planted very firmly, in August or very early in September. In planting, the collar or neck must be only just below the ground; and the roots should be well spread out on all sides.

Raspberries.—When planting, spread out the roots; shorten back the canes in spring to a height of 6 or 9 inches, or to 3 or 4 buds. Do not expect fruit the first season. This treatment ensures fine fruiting canes the next year.

NOTES ON PRUNING.

Apples, Pears, Plums, Damsons, and Cherries.—In order to promote strong growth standard Apples, Pears, and Plums should have their shoots shortened at planting to about one-third of their length, and should not be allowed to bear fruit for two years. Damsons require little pruning, as the buds on the lower part of the shoots break into growth naturally. Cherries are best left unpruned the first season, and the less they are cut the better at all times. Young bush trees should be treated in the same way as standards, but older ones which have been trained in a nursery will not need much pruning. After the first year's growth has been made from the cut-back shoots, standards will only need the removal in summer of shoots that cross one another, or crowd the centre of the tree. Bush trees should have the side shoots on the branches shortened to about 6 good leaves at the end of July, cutting further back to 2 or 3 buds in winter, when the leading shoots may also be pruned to 10 or 12 buds.

Strawberries.—When not wanted for planting, cut off the "runners" as they appear, so as to throw all the strength into the main crowns. Do not cut the leaves off. Fresh beds should be made every third year; a better plan is to plant one or two fresh rows every year, and destroy one or two old ones.

Raspberries.—Thin out the young growths in early summer by *pulling up* the superfluous ones, and cut out the old canes altogether as soon as they have done fruiting. Manure should be laid over the roots and left to decay. Raspberries are injured by digging amongst the fibrous roots near the canes.

Currants and Gooseberries.—Red and White Currants should have the young side shoots shortened to 5 or 6 leaves early in summer, cutting back to a couple of buds in winter, and shortening the main leading shoots then to 6 inches, more or less, according as it is wished to let the bush increase in size or not. The centre of the bushes should be kept quite free from growths. Black Currants should be pruned on the exactly opposite plan, cutting out the old wood and leaving the young summer growths their full length, only removing shoots in the centre, so that the leaves of those remaining do not touch one another. Red and White Currants bear chiefly on the old wood; Black Currants on the new (*i.e.* last year's) growth. Gooseberries bear both on the spurs and young wood; therefore in pruning leave a young shoot here and there where room can

be found or made by cutting out old enfeebled parts ; but always remember that the pruning should be so done that the hand can be passed through all parts of the bush without touching the thorns.

NOTES ON ROOT-PRUNING.

Root-pruning, it must always be remembered, is not to be regarded as one of the ordinary routine operations of gardening, but should be looked upon entirely as a surgical operation, in a case of need. Given transplanted trees, on proper stocks, it is an exception for the roots to want pruning at all ; and never can it be necessary to repeat the operation, save possibly in a very strong land and after an interval of many years.

When, however, a fruit tree grows so rapidly that the proper balance between the roots and the growth of the tree is not maintained, the tree ceases, under such conditions, to form its due proportion of fruit buds, and the period has arrived when root-pruning will be beneficial. The proper time to perform this operation is in October, immediately after the fruit has been gathered. First dig a trench on one side of the tree, or half round it, 3 feet from the main stem, and of sufficient depth to intercept the coarse-growing side roots, which should be shortened with a sharp knife, taking care to cut from the under side upwards. Then at a depth of 18 inches or 2 feet gradually work under the centre of the tree, and remove any tap-roots which strike downwards. If the surface fibres are fairly numerous, the trench can be continued right round the tree ; but if the fibres are few, and the tap-roots have been cut, it will be as well to leave the opposite side of the tree to be done the next year ; more especially is this advisable with large pyramids, espaliers, or wall trees, which it would be dangerous to root-prune entirely at one operation. Fill up the trench carefully and evenly, laying out the roots and fibres laterally, with only a slight dip downwards at their ends. Very large trees should have their boughs reduced, and the shoots pruned-in before root-pruning is done ; and in all cases a slight mulching of good rotten dung on the surface in April will stimulate new root action.

Standard trees should never be root-pruned, but manure should be withheld from those growing too rapidly, in order to induce them to form fruit buds.

Peaches, Nectarines, and Plums form a mass of fibrous roots, and if the operation be carefully done before the leaves fall, they may be entirely lifted, have their coarse roots shortened or altogether removed, and be replanted in their former positions, taking care to introduce some fresh loam. After replanting, give one good watering, which will settle the trees, and they will at once take to the new soil and form rootlets, before the winter sets in. With all stone fruits some slaked lime should be mixed in the soil.

Figs frequently grow too rapidly to ripen their wood, and thus fail to produce a crop. In this case they should be severely root-pruned, and the trenches refilled with mortar rubbish, brickbats, or porous stones. This will have the desired effect, if combined with thinning out the small weakly shoots.

NOTES ON MANURING, &c.

It is a mistake to give young trees heavy dressings of manure, as the ordinary soil of gardens is rich enough. For the first few years aim at laying the foundation of a good tree; keep the boughs rather thin, *i.e.* well apart, not crowded, in order that the leaves may be fully exposed to sun and air, so as to ripen the wood, and thus form a sturdy basis for future good crops. Some varieties will bear the second year, and may then be assisted by manure laid on the surface after the fruit is well set, or by waterings of liquid manure, or soapy water, &c., in summer, but fruit trees, young or old, if they are growing and healthy, should only have manure applied when they are bearing a crop, so as to enable them to bring the year's fruit to perfection, and at the same time form fresh blossom buds for next year. When trees make only 3 to 6 inches of extension growth they need generous support; if 6 to 12 inches, give moderate assistance; if 12 to 18 inches, give no manure. If a bush tree makes very gross growth with few or no fruit buds do not cut back all the gross shoots severely, but thin them well out in summer, and in autumn dig well down and shorten the strong roots by root-pruning; standards should never be root-pruned. It is a bad thing to dig amongst fruit trees with a spade, as it injures the small fibrous roots which ought to be encouraged to increase near the surface. These small surface (essentially fruit-producing) roots are greatly injured either by *digging* [but not by hoeing—see (x)] or by extreme dryness of soil. Spreading a covering of farmyard manure over the surface as far as the roots extend, on the first approach of hot weather, cannot be too highly advised; but heavy coatings of dung during March, April, and most of May are injurious, as they exclude the sun's warmth, which is then so much needed to promote healthy root action.

ARTIFICIAL MANURE.

All fruit trees and bushes needing support will be benefited by an application of 4 ozs. of basic slag and 1 oz. of kainit per square yard, as far as the roots extend, in the autumn; followed by 2 ozs. of superphosphate and 1 oz. of sulphate of ammonia in February or March. There will then be conveyed to the soil lime, phosphates, potash, nitrogen, magnesia, and a little iron. In chalky soils or dry "hot" land, nitrate of soda may be used instead of sulphate of ammonia, but a little later, or when the blossom buds are expanding, another dressing may follow if trees are heavily set with fruit. These dressings may be increased somewhat or diminished according to the condition of the trees. It is of small use applying the two first-named minerals—basic slag and kainit—late in the spring, as they are not dissolved in time for appropriation by the roots during the current season.

Soot, and wood or bonfire ashes, spread over the surface with a little lime form an excellent manure for Apples—indeed, for all fruit trees.

ADDENDA.

Amateurs, who would like to have some of the more promising of the newer or less known fruits than those before mentioned, are advised to try the following :

APPLES.

- Langley Pippin. September. A nice-flavoured soft fleshed variety.
 American Mother. October. Of very fine flavour.
 Norfolk Beauty. October. A good grower and bearer. Large, and cooks well.
 St. Edmund's Russet. October and November. A large and very fine Russet.
 Christmas Pearmain. December and January. A great bearer of brisk flavour.
 Ross Nonpareil. December and January. A good winter Apple too little known. Said to be both of better flavour and a better bearer than Searlet Nonpareil.
 Baumann's Red Reinette. January and February. Of wonderful colour.

PEARS.

- Triomphe de Vienne. October. Very large and very good.
 Beurré d'Avalon. October. Very like Beurré Hardy, but brisker in flavour.
 Marguerite Marillat. October. Very large.
 Thompson. October. Of superb flavour.
 Belle Julie. October and November. Medium grower. A small, delicious and free-bearing Pear, but quickly decays.
 Beurré Alexander Lucas. October and November. Fruit large, with a Bon Chrétien flavour.
 Beurré d'Anjou. November. Of fine flavour and quality.
 Fondante de Thiriot. November. Wonderful bearer.
 Beurré Dumont. November. Of very fine flavour and quality.
 Charles Ernest. November. Resembles Pitmaston Duchess, but of superior flavour.
 General Wauchope. December. A new Pear of first-class flavour.
 President Barabé. December. A new Pear of fine flavour, but a weak grower.
 Le Lectier. December. Large, and of good flavour.
 Duchesse de Bordeaux. January and February. Compact grower.

STRAWBERRIES.

- Countess. Magnificent perfume and flavour.
 Auguste Boisselot. Large round soft berries with brisk flavour, which melt away in the mouth.
 Louis Gauthier. A white Strawberry ; an enormous bearer and of fine flavour.
 Fillbasket. A great bearer of good flavour.
 Dr. Hogg. The finest flavour, but, like British Queen, is useless unless the soil be heavy and the cultivation very rich.

TWELFTH ANNUAL EXHIBITION OF BRITISH- GROWN FRUIT.

HELD AT THE SOCIETY'S HALL, VINCENT SQUARE, S.W.,
OCTOBER 10, 11, and 12, 1905.

THIS Show was held for the second time in the Society's Great Hall, which was well filled with a most excellent collection of fruit. The number of exhibits was somewhat less than in 1904; but for this the unfavourable weather in the spring is responsible, as it shattered the hopes of most fruit growers, and caused the crop to be considerably below the average in quantity. The quality of many of the exhibits, however, was very striking, and some truly magnificent fruit was shown. A Gold Medal and the Sherwood Cup, which the Council had decided should be awarded in 1905 to the best collection of British-grown Fruit, were gained by Messrs. T. Rivers & Son, for the best exhibit of Orchard House Fruit and Trees. This collection showed the perfection to which the art of cultivating fruit under glass has attained. Messrs. G. Bunyard & Co., Maidstone, gained the Second Prize in the same class, a Silver-gilt Hogg Medal, and also the First Prize, a Gold Medal, for "Fruit grown entirely out of doors," with a splendid collection of fruit which made a very notable display. The First Prize for a smaller exhibit of fruit grown out of doors, a Silver-gilt Hogg Medal, was won by Mr. J. Basham, Newport, Mon. The Second and Third Prizes, the Silver-gilt Knightian Medal and the Silver Knightian, were gained respectively by the King's Acre Nurseries, Hereford, and Messrs. Paul & Sons, Cheshunt.

LIST OF SUBSCRIBERS TO THE PRIZE FUND OF 1905.

	£	s.	d.
Austin & Co., St. James's Works, Kingston-on-Thames	0	10	6
Basham, John, Bassaleg, Newport, Mon.	0	10	6
Bell, W. H., Seend, Melksham	1	1	0
Brown, J., Orford House Gardens, Market Rasen	0	5	0
Bunyard, G., & Co., Royal Nurseries, Maidstone	10	10	0
Bythway, Major, Warborough, Llanelly	1	1	0
Carlisle, A., Henlow Grange Gardens, Biggleswade	0	5	0
Challis, T., Wilton House Gardens, Salisbury	0	5	0
Cornford, J., Quex Park, Birchington	0	5	0
Eddy, J. Ray, The Grange, Carleton, Skipton	1	0	0
Edwards, R., Beechy Lees Gardens, Sevenoaks	0	5	0
Fowler, G., 78 Bark Street, Maidstone	1	0	0
Heilbut, S., Holyport, nr. Maidenhead	1	1	0
Hutchesson, F., Queen's Road, Guernsey	0	5	0
Kay, P. E., Claigmar, Church End, Finchley, N.	1	1	0
Lee, John, Higher Bebington	0	10	6
McLaren, Mrs. E., 56 Ashley Gardens, S.W.	1	1	0
Munro, Miss, 27 Eaton Place, S.W.	0	2	6
Paulin, W. T., Broadfields, Winchmore Hill	2	2	0
Pearson, J. R., & Sons, Lowdham, Notts	1	10	0
Prizes and			
Perkins, T., & Sons, Northampton	2	2	0
Pyne, G., Topsham, Devon	0	10	6
Reid, J. W., St. Croix, Leamington Spa	0	5	0

	£	s.	d.
Robb, Mrs., 46 Rutland Gate, S.W.	0	5	0
Ross, Charles, Welford Park Gardens, Newbury	0	10	6
Southby, P. Bampton, Faringdon, Berks	0	5	0
Spooner, S., & Sons, Hounslow	1	1	0
Swanley Horticultural College	1	1	0
Turton, T., The Castle Gardens, Sherborne, Dorset	0	10	6
Walker, J., Ham Common, Surrey	1	1	0
Wallace, L. A., Sanderstead Court, Croydon	5	0	0
White, Mrs. T., Walton Hall, Kelso, N.B.	1	1	0
Whiting, R. M., Credenhill, Hereford	0	10	0
Wigan, A. L., Forest Park, Windsor	2	2	0
Willard, Jesse, Holly Lodge Gardens, Highgate	0	10	6
Williams, H. H., Pencalenick, Truro	1	0	0
Woodward, G., Barham Court Gardens, Teston	0	10	6

THE JUDGES.

The following gentlemen kindly acted as Judges, and deserve the best thanks of the Society for their oftentimes very difficult work, viz.—

Allan, W., Gunton Park Gardens, Norwich.
 Arnold, T., Cirencester Park Gardens, Gloucester.
 Bacon, W. H., Mote Park Gardens, Maidstone.
 Barnes, N. F., Eaton Gardens, Chester.
 Basham, J., Bassaleg, Newport, Mon.
 Bates, W., Cross Deep Gardens, Twickenham.
 Beckett, E., Aldenham House Gardens, Elstree.
 Blick, C., Warren House Gardens, Hayes, Kent.
 Bowerman, J., Hackwood Park Gardens, Basingstoke.
 Challis, T., V.M.H., Wilton House Gardens, Salisbury.
 Cheal, J., Crawley, Sussex.
 Coomber, T., The Hendre Gardens, Monmouth.
 Cornford, J., Quex Park Gardens, Birchington.
 Crump, W., V.M.H., Madresfield Court Gardens, Malvern.
 Dawes, J., Ledbury Park Gardens, Ledbury.
 Dean, Alex., V.M.H., 62 Richmond Road, Kingston.
 Divers, W. H., Belvoir Castle Gardens, Grantham.
 Douglas, J., V.M.H., Great Bookham, Surrey.
 Earp, W., Bayham Abbey Gardens, Lamberhurst.
 Fielder, C. R., North Mymms Park Gardens, near Hatfield.
 Foster, C., University College, Reading.
 Fyfe, W., Lockinge Park Gardens, Wantage.
 Getting, H. F., Ashfield Park, Ross, Hereford.
 Gibson, J., Welbeck Abbey Gardens, Worksop.
 Hudson, J., V.M.H., Gunnersbury House Gardens, Acton, W.
 Jaques, J., Pound Street, Wendover, Tring.
 Kay, Peter, V.M.H., Claigmar Vineyard, Church End, Finchley, N.
 Kelf, G., South Villa Gardens, Regent's Park, N.W.
 Lyne, J., Foxbury Gardens, Chislehurst.
 McIndoe, J., V.M.H., 8 Hythe Street, Dartford.
 Markham, H., Wrotham Park Gardens, High Barnet.
 Mortimer, S., Rowledge, Farnham, Surrey.

Norman, G., V.M.H. (the late).
 Parr, H., Trent Park Gardens, New Barnet.
 Paul, G., J.P., V.M.H., Cheshunt, Herts.
 Pearson, A. H., The Hut, Lowdham, Nottingham.
 Pearson, C. E., Chilwell Nurseries, Lowdham, Nottingham.
 Poupart, W., Marsh Farm, Twickenham.
 Rivers, H. Somers, Sawbridgeworth.
 Ross, C., Welford Park Gardens, Newbury.
 Salter, C. J., Woodhatch Gardens, Reigate.
 Taylor, W., Tewkesbury Lodge Gardens, Forest Hill, S.E.
 Veitch, P. C. M., J.P., New North Road, Exeter.
 Walker, J., The Farm, Ham Common, Surrey.
 Willard, Jesse, Holly Lodge Gardens, Highgate.
 Woodward, G., Barham Court Gardens, Teston.

THE REFEREES.

The following gentlemen very kindly held themselves at the disposal of the Society to act in conjunction with any of the Judges as Referees if required, viz.—

Bunyard, G., V.M.H., Royal Nurseries, Maidstone.
 Thomas, Owen, V.M.H., 25 Waldeck Road, West Ealing.
 Wythes, G., V.M.H., Syon House Gardens, Brentford.

OFFICIAL PRIZE LIST.

(The address and the Gardener's name are entered on the first occurrence, but afterwards only the Owner's name is recorded.)

DIVISION I.

Fruits grown under Glass or otherwise.

Open to Gardeners and Amateurs only.

NOTE.—Exhibitors can compete in one Class only of Classes 1, 2; and of Classes 3, 4.

Class 1.—Collection of 9 dishes of Ripe Dessert Fruit:—6 kinds at least; only 1 Pine, 1 Melon, 1 Black and 1 White Grape allowed; not more than two varieties of any other kind, and no two dishes of the same variety.

First Prize, Silver Cup and £5; Second, £5; Third, £3.

1. The Earl of Harrington, Derby (gr. J. H. Goodacre).
2. Lord Biddulph, Ledbury (gr. J. Dawes).
3. Hon. Mr. Justice Swinfen Eady, Weybridge (gr. J. Lock).

Class 2.—Collection of 6 dishes of Ripe Dessert Fruit:—4 kinds at least; only 1 Melon, 1 Black and 1 White Grape allowed; not more than two varieties of any other kind, and no two dishes of the same variety. Pines excluded.

First Prize, Silver Cup and £3; Second, £3; Third, £2.

1. The Earl of Londesborough, Market Weighton (gr. J. C. McPherson).
2. Sir Marcus Samuel, Bart., Maidstone (gr. W. H. Bacon).
3. Lady Tate, Streatham (gr. W. Howe).

Class 3.—Grapes, 6 distinct varieties, 3 bunches of each; both Black and White must be represented.

First Prize, Silver Cup and £3; Second, £3.

1. J. W. Fleming, Esq., Romsey (gr. W. Mitchell).
2. No award.

Class 4.—Grapes, 4 varieties, selected from the following: 'Madresfield Court,' 'Mrs. Pince,' 'Muscat Hamburgh,' 'Muscat of Alexandria' or 'Canon Hall' (not both), 'Mrs. Pearson,' and 'Dr. Hogg,' 3 bunches of each.

First Prize, Silver Cup and £3; Second, £3; Third, £2.

1. C. Bayer, Esq., Forest Hill (gr. W. Taylor).
2. } No award.
3. }

Class 5.—Grapes, Black Hamburgh, 3 bunches.

First Prize, £1. 10s.; Second, £1; Third, 10s.

1. J. W. Fleming, Esq.
2. Col. G. B. Archer-Houblon, Bishops Stortford (gr. W. Harrison).
3. The Earl of Harrington.

Class 6.—Grapes, 'Mrs. Pince,' 3 bunches.

First Prize, £1. 10s.; Second, £1.

1. J. W. Fleming, Esq.
2. W. Cooper, Esq., Towcester (gr. G. J. Squibbs).

Class 7.—Grapes, Alicante, 3 bunches.

First Prize, £1. 10s.; Second, £1; Third, 10s.

1. G. C. Raphael, Esq., Englefield Green (gr. H. H. Brown).
2. W. Cooper, Esq.
3. Lady Tate.

Class 8.—Grapes, 'Madresfield Court,' 3 bunches.

First Prize, £1. 10s.; Second, £1; Third, 10s.

1. J. W. Fleming, Esq.
2. C. Bayer, Esq.
3. Col. G. B. Archer-Houblon (gr. W. Harrison).

Class 9.—Grapes, any other Black Grape, 3 bunches.

First Prize, £1. 10s.; Second, £1; Third, 10s.

1. Col. G. B. Archer-Houblon (gr. W. Harrison).
2. J. W. Fleming, Esq.
3. G. C. Raphael, Esq.

Class 10.—Grapes, 'Muscat of Alexandria,' 3 bunches.

First Prize, £2. 10s.; Second, £1. 10s.; Third, £1.

1. The Earl of Harrington.
2. Major Hibbert, Rugby (gr. W. Camm).
3. C. Bayer, Esq.

Class 11.—Grapes, any other White Grape, 3 bunches.

First Prize, £1. 10s.; Second, £1; Third, 10s.

1. M. Michaelis, Esq., Oxted (gr. J. D. Simmons).
2. E. Ascherson, Charing (gr. J. Pitts).
3. C. Bayer, Esq.

Class 12.—Grapes, 3 bunches of any Frontignan varieties.

First Prize, £1. 10s.; Second, £1.

No entry.

Class 13.—Collection of Hardy Fruits, in a space not exceeding 12×3 :— 30 dishes distinct, grown entirely in the open; not more than 12 varieties of Apples or 8 of Pears.

First Prize, The Hogg Medal and £3; Second, £2; Third, £1.

1. { Lord Biddulph.
Major Powell-Cotton, Birchington (gr. J. Cornford). } equal.
2. Sir Marcus Samuel.

DIVISION II.

Open to Nurserymen only.

Conditions for Classes 14, 15, 16, 17, and 18.

Nurserymen and Market Growers must exhibit as individuals or as firms. *They must have actually grown all they exhibit.* Combinations of individuals or firms are not allowed, nor collections of produce from districts.

Nurserymen and Market Growers desiring to exhibit at this Show must make application for space as under Class 14 or 15; 16; 17 or 18. No other spaces but the above can be allotted. Exhibitors can only enter in one of Classes 14 and 15; or in one of 17 and 18.

Nurserymen and Market Growers may adopt any method of staging they desire, subject to the following reservations: (a) The number of fruits is not limited, but the baskets or dishes must not exceed 15 inches in diameter if circular, or 19×15 if rectangular, unless they be sieves or half-sieves; (b) Duplicate trees are permitted in Class 16, but *not duplicate baskets or dishes* of fruit in any of the Classes; (c) No trees are admissible in Classes 14 and 15; (d) The fruit in exhibits under Classes 14 and 15 must in no case be raised higher than 18 inches from the table, but the use of foliage plants is allowed.

No awards of any sort will be made to Nurserymen and Market Growers who do not conform to the above regulations.

IMPORTANT.—Nurserymen and Market Growers having entered and finding themselves unable to exhibit are *particularly* requested to give four days' notice to the Superintendent, R.H.S. Gardens, Wisley, Ripley, Surrey.

Allotment of table-space will be made on the following scales:—

For Fruit grown entirely out of doors.

Class 14.—24 feet run of 6 feet tabling.

First Prize, Gold Medal; Second, Silver-gilt Knightian Medal.

1. Messrs. G. Bunyard & Co., Maidstone.
2. Messrs. H. Cannell & Son, Swanley.

Class 15.—16 feet run of 6 feet tabling.

First Prize, Silver-gilt Hogg Medal; Second, Silver-gilt Knightian Medal; Third, Silver Knightian Medal.

1. Mr. John Basham, Newport, Mon.
2. King's Acre Nurseries, Hereford.
3. Messrs. Paul & Son, Cheshunt.

For Orchard-house Fruit and Trees.

Class 16.—24 feet by 6 feet of stage.

First Prize, Gold Medal and Sherwood Cup;
Second, Silver-gilt Hogg Medal.

1. Messrs. Rivers & Son, Sawbridgeworth.
2. Messrs. G. Bunyard & Co.

DIVISION III.

Open to Market Growers only.

Allotment of Table Space will be made on the following scales :—

Class 17.—18 feet run of 6 feet tabling.

First Prize, Silver-gilt Knightian Medal.

1. Messrs. W. Poupart & Co., Twickenham.

Class 18.—12 feet run of 6 feet tabling.

First Prize, Silver-gilt Banksian ; Second, Silver Knightian Medal.

1. Mr. G. H. Dean, Sittingbourne.
2. Messrs. W. Lobjoit & Son, Hounslow.

DIVISION IV.

Fruits grown entirely in the Open Air—Except Class 31.

Open to Gardeners and Amateurs only. Nurserymen and Market Growers excluded.

Exhibitors of Apples or Pears in Division IV. are excluded from Division VI.

NOTE.—Exhibitors can compete in one Class only of the Classes 19, 20, 21 ; or 24, 25, 26, 27.

Class 19.—Apples, 24 dishes distinct, 16 Cooking, 8 Dessert. The latter to be placed in the front row.

First Prize, £4 ; Second, £3 ; Third, £2.

1. Lieut.-Col. Borton, Hunton, Maidstone (gr. C. Crane).
2. Lord Biddulph.
3. Mrs. T. B. Haywood, Reigate (gr. C. J. Salter).

Class 20.—Apples, 18 dishes distinct, 12 Cooking, 6 Dessert. The latter to be placed in the front row.

First Prize, £3 ; Second, £2 ; Third, £1.

1. The Earl of Pembroke, Salisbury (gr. T. Challis).
2. E. Ascherson, Esq.
3. The Duke of Hamilton, Wimborne (gr. J. Stevenson).

Class 21.—Apples, 12 dishes distinct, 8 Cooking, 4 Dessert. The latter to be placed in the front row.

First Prize, £2 ; Second, £1 ; Third, 15s.

1. Rt. Hon. W. H. Long, M.P., Trowbridge (gr. W. Strugnell).
2. C. A. Morris Field, Esq., Tunbridge Wells (gr. J. R. Allan).
3. H. T. Partridge, Esq., J.P., Bletchingley (gr. J. W. Barks).

Class 22.—Cooking Apples, 6 dishes, distinct.

First Prize, £1 ; Second, 15s.

1. Hon. John R. de C. Boscawen, Perranwell.
2. Lieut.-Col. Borton.

Class 23.—Dessert Apples, 6 dishes, distinct.

First Prize, £1 ; Second, 15s.

1. Lieut.-Col. Borton.
2. W. Cooper, Esq.

Class 24.—Dessert Pears, 18 dishes, distinct.

First Prize, £3. 10s.; Second, £2; Third, £1.

1. Lord Biddulph.
2. Sir Marcus Samuel.
3. Major Powell-Cotton.

Class 25.—Dessert Pears, 12 dishes, distinct.

First Prize, £2; Second, £1; Third, 15s.

1. Mr. A. Basile, Weybridge.
2. Lieut.-Col. Borton.
3. No award.

Class 26.—Dessert Pears, 9 dishes, distinct.

First Prize, £1. 10s.; Second, 17s. 6d.

1. Rt. Hon. W. H. Long, M.P.
2. No award.

Class 27.—Dessert Pears, 6 dishes, distinct.

First Prize, £1; Second, 15s.

1. A. Benson, Esq., Merstham (gr. W. Mancey).
2. C. G. B. Marsham, Esq., Sevenoaks (gr. R. Edwards).

Class 28.—Stewing Pears, 3 dishes, distinct.

First Prize, 15s.; Second, 10s.

1. Major Powell-Cotton.
2. No award.

Class 29.—Peaches, grown entirely out of doors, 1 dish of one variety.

First Prize, 10s.; Second, 7s.

1. The Earl of Harrington.
2. Mr. R. Alderman, Cambridge.

Class 30.—Nectarines, grown entirely out of doors, 1 dish of one variety.

First Prize, 10s.; Second, 7s.

1. H. A. Attenborough, Daventry (gr. A. Child).
2. Lord Biddulph.

Class 31.—Plums, grown under Glass, 3 dishes, distinct.

First Prize, £1; Second, 10s.

1. Lord Howard de Walden, Saffron Walden (gr. J. Vert).
2. No award.

Class 32.—Plums, 3 dishes of Plums, distinct.

First Prize, 15s.; Second, 10s.

1. The Marquis of Northampton, Northampton (gr. A. R. Searle).
2. Lord Biddulph.

Class 33.—Plums, 1 dish of Coe's Golden Drop.

First Prize, 7s.; Second, 5s.

1. Major Hibbert.
2. J. B. Fortescue, Esq., Maidenhead (gr. C. Page).

Class 34.—Plums, 1 dish of any other Dessert variety.

First Prize, 7s. ; Second, 5s.

1. Lord Howard de Walden.
2. G. E. Crisp, Esq., Croydon.

Class 35.—Plums, 1 dish of Cooking of one variety.

First Prize, 7s. ; Second, 5s.

1. F. Bibby, Esq., Shrewsbury (gr. J. Taylor).
2. Lord Biddulph.

Class 36.—Damsons, or Bullaces, 3 dishes, distinct.

First Prize, 15s. ; Second, 10s.

No entry.

Class 37.—Morello Cherries, 50 fruits.

First Prize, 7s. ; Second, 5s.

1. J. B. Fortescue, Esq.
2. Mr. J. Howard, Newbury.

Class 38.—Grapes grown out of doors, Basket of about 6lb. weight.

First Prize, 15s. ; Second, 7s. 6d.

1. G. E. Crisp, Esq.
2. No award.

DIVISION V.

Special District County Prizes.

Open to Gardeners and Amateurs only.

(In this Division all fruit must have been grown in the open.)

N.B.—Exhibitors in Division V. must not compete in Divisions II. or III., or in Classes 1, 2, 3, 4, 13, 19, 20, 21, 24, 25, 26.

Class AA.—Apples, 6 dishes distinct, 4 Cooking, 2 Dessert.

1st Prize, £1 and 3rd class Single Fare from Exhibitor's nearest railway station to London * ; 2nd Prize, 15s. and Railway Fare as above.*

Class BB.—Dessert Pears, 6 dishes, distinct.

1st Prize, £1. 10s. and Railway Fare as above * ; 2nd Prize, £1 and Railway Fare as above.*

The two above classes, AA and BB, are repeated eleven times as follows, and Exhibitors must enter for them thus : " Class AA 41 " or " BB 42," and so on, to make it quite clear whether they mean Apples or Pears.

Class 39.—Open only to Kent Growers.

AA. { 1. C. G. B. Marsham, Esq.
2. W. J. Cheston, Esq., Bromley.

BB. { 1. C. G. B. Marsham, Esq.
2. E. Phillips, Esq., Sittingbourne.

* In the event of the same Exhibitor being successful in both classes AA and BB only one Railway Fare will be paid.

Class 40.—Open only to Growers in Surrey, Sussex, Hants, Dorset, Somerset, Devon, and Cornwall.

- AA. { 1. Executors of J. K. D. Wingfield-Digby, Esq., Sherborne (gr. T. Turton).
2. M. Michaelis, Esq.
3. Lord Grimthorpe, Virginia Water (gr. G. Baskett).
- BB. { 1. Mr. W. A. Cook, Horsham.
2. Executors of J. K. D. Wingfield-Digby, Esq.

Class 41.—Open only to Growers in Wilts, Gloucester, Oxford, Bucks, Berks, Beds, Herts, and Middlesex.

- AA. { 1. J. B. Fortescue, Esq.
2. E. S. Hanbury, Esq., Ware (gr. F. W. Church).
- BB. { 1. J. Westmacott, Esq., Ware (gr. G. Gumbrell).
2. Capt. Farwell, J.P., Burnham (gr. W. Hutt).

Class 42.—Open only to Growers in Essex, Suffolk, Norfolk, Cambridge, Hunts, and Rutland.

- AA. { 1. Col. G. B. Archer-Houblon (gr. W. Harrison).
2. Nicholas R. Page, Esq., Clacton-on-Sea.
- BB. { 1. Col. the Hon. C. Harbord, Norwich (gr. W. Allan).
2. Col. G. B. Archer-Houblon (gr. W. Harrison).

Class 43.—Open only to Growers in Lincoln, Northampton, Warwick Leicester, Notts, Derby, Staffs, Shropshire, and Cheshire.

- AA. { 1. John Lee, Esq., Higher Bebington.
2. H. G. Wadlow, Esq., Peterborough.
- BB. { 1. Major Hibbert.
2. F. Bibby, Esq.

Class 44.—Open only to Growers in Worcester, Hereford, Monmouth, Glamorgan, Carmarthen, and Pembroke.

- AA. { 1. J. H. Wootton, Esq., Byford.
2. E. W. Caddick, Esq., Ross.
- BB. { 1. H. L. Lutwyche, Esq., Ross (gr. J. E. Jones).
2. W. E. Hyde, Esq., Ledbury.

Class 45.—Open only to Growers in the other Counties of Wales.

- AA. { 1. Col. Cornwallis West, Ruthin (gr. H. Forder).
2. No award.
- BB. { 1. Col. Cornwallis West.
2. W. H. Palmer, Esq., Aberystwith (gr. R. C. Williams).

Class 46.—Open only to Growers in the Six Northern Counties of England, and in the Isle of Man.

AA.—No entry.

BB.—No entry.

Class 47.—Open only to Growers in Scotland.

AA. { 1. Mr. C. Webster, Fochabers, N.B.
2. Mr. John M. Stewart, Castle Douglas, N.B.

BB. { 1. Mr. C. Webster.
2. Mr. J. Day, Garlieston.

Class 48.—Open only to Growers in Ireland.

AA. { 1. W. Kavanagh, Esq., Borris (gr. F. Browne).
2. No award.

BB. { 1. W. Kavanagh, Esq.
2. No award.

Class 49.—Open only to Growers in the Channel Islands.

AA.—No entry.

BB.—No entry.

DIVISION VI.

Single Dishes of Fruit grown in the Open Air.

Open to Gardeners and Amateurs only. Nurserymen and Market Growers excluded.

Prizes in each Class (except 58, 81, and 82). 1st Prize, 7s.;
2nd Prize, 5s.

CHOICE DESSERT APPLES.

N.B.—Quality, Colour, and Finish are of more merit than Size.

Class 50.—Adams' Pearmain.

1. Capt. Farwell, J.P.
2. Executors of J. K. D. Wingfield-Digby, Esq.

Class 51.—Allington Pippin.

1. Mrs. H. St. Vincent Ames, Westbury-on-Trym (gr. W. H. Bannister).
2. Nicholas R. Page, Esq.

Class 52.—American Mother.

1. J. B. Fortescue, Esq.
2. Mr. A. W. Metcalfe, Luton.

Class 53.—Blenheim Orange. (See Class 72.)

Small highly coloured fruits which will pass through a 3-inch ring.

1. R. J. Lambert, Esq., Oxshott (gr. G. D. Reid).
2. Capt. Farwell, J.P.

Class 54.—Cornish Aromatic.

1. Hon. Mr. Justice Swinfen Eady.
2. Col. G. B. Archer-Houblon (gr. W. Harrison).

Class 55.—Cox's Orange Pippin.

1. Rev. G. Engleheart, Dinton.
2. Lord Poltimore, Exeter (gr. T. H. Slade).

Class 56.—Duke of Devonshire.

1. W. A. Voss, Esq., Rayleigh.
2. The Marquis of Northampton.

Class 57.—Egremont Russet.

1. J. B. Fortescue, Esq.
2. John Lee, Esq.

Class 58.—Houblon.

First Prize, £5 ; Second, £3 ; Third, £2.

Presented by Messrs. Horne, of Cliffe, Rochester.

Open also to Nurserymen.

No entry.

Class 59.—James Grieve.

1. E. S. Hanbury, Esq.
2. Col. G. B. Archer-Houblon (gr. W. Harrison).

Class 60.—King of the Pippins.

1. Mr. J. Howard.
2. Capt. Farwell, J.P.

Class 61.—Lord Hindlip.

1. J. H. Wootton, Esq.
2. No award.

Class 62.—Margil.

1. H. L. Lutwyche, Esq.
2. Col. G. B. Archer-Houblon (gr. W. Harrison).

Class 63.—Ribston Pippin.

1. M. Michaelis, Esq.
2. Capt. Farwell, J.P.

Class 64.—Ross Nonpareil.

No entry.

Class 65.—St. Edmund's Pippin.

1. No award.
2. C. P. Wykeham Martin, Esq., Maidstone (gr. D. McAinsh).

Class 66.—Sturmer Pippin.

1. J. H. Wootton, Esq.
2. E. W. Caddick, Esq.

Class 67.—Any other variety not named above.

Four Prizes, 7s., 6s., 5s., 4s.

An Exhibitor may only enter one variety in Class 67, in which Class eight Fruits must be shown to a dish for the Judges to be able to taste two of them.

1. F. Paget Norbury, Esq., Malvern.
2. H. H. Williams, Esq., Truro.
3. Executors of J. K. D. Wingfield-Digby, Esq.
4. Nicholas R. Page, Esq.

CHOICE COOKING APPLES.

N.B.—Quality and Size are of more merit than Colour.

Class 68.—Alfriston.

1. H. H. Williams, Esq.
2. John Lee, Esq.

Class 69.—Annie Elizabeth.

1. Executors of J. K. D. Wingfield-Digby, Esq.
2. Col. G. B. Archer-Houblon, Newbury (gr. C. Ross).

Class 70.—Beauty of Kent.

1. Executors of J. K. D. Wingfield-Digby, Esq.
2. No award.

Class 71.—Bismarck.

1. H. H. Williams, Esq.
2. Executors of J. K. D. Wingfield-Digby, Esq.

Class 72.—Blenheim Orange. Large fruits. (See Class 58.)

1. Jeremiah Colman, Esq., Reigate (gr. W. Bound).
2. E. W. Caddick, Esq.

Class 73.—Bramley's Seedling.

1. No award.
2. Jeremiah Colman, Esq.

Class 74.—Dumelow's Seedling (*syns.* Wellington, Normanton Wonder).

1. Mr. A. Tidy, Maidenhead.
2. Col. G. B. Archer-Houblon (gr. W. Harrison).

Class 75.—Gascoyne's Scarlet.

1. John Lee, Esq.
2. Jeremiah Colman, Esq.

Class 76.—Golden Noble.

1. Jeremiah Colman, Esq.
2. Mr. A. Tidy.

Class 77.—Hormead Pearmain.

1. E. W. Caddick, Esq.
2. Executors of J. K. D. Wingfield-Digby, Esq.

Class 78.—Lane's Prince Albert.

1. E. W. Caddick, Esq.
2. Executors of J. K. D. Wingfield-Digby, Esq.

Class 79.—Lord Derby.

1. H. L. Lutwyche, Esq.
2. J. B. Fortescue, Esq.

Class 80.—Mère de Ménage.

1. Executors of J. K. D. Wingfield-Digby, Esq.
2. John Lee, Esq.

Class 81.—Newton Wonder.

First Prize, 20s. ; Second, 10s. ; Third, 5s.

Prizes presented by Messrs. J. R. Pearson & Sons, Lowdham, Notts.

Open only to Exhibitors living in Cardigan, Radnor, Shropshire, Stafford, Warwick, Northampton, Bedford, Cambridge, Essex, or counties further north.

1. F. Edinborough, Esq., Rayleigh.
2. John Lee, Esq.
3. The Duke of Rutland, Grantham (gr. W. H. Divers).

Class 82.—Newton Wonder.

First Prize, 20s. ; Second, 10s. ; Third, 5s.

Prizes presented by Messrs. J. R. Pearson & Sons, Lowdham, Notts.

Open only to Exhibitors living south of the before-named counties.

1. F. Paget Norbury, Esq.
2. E. W. Caddick, Esq.
3. Executors of J. K. D. Wingfield-Digby, Esq.

Class 83.—Peasgood's Nonesuch.

1. E. S. Hanbury, Esq.
2. R. P. Greg, Esq., Buntingford (gr. G. Budd).

Class 84.—Potts' Seedling.

1. Executors of J. K. D. Wingfield-Digby, Esq.
2. E. W. Caddick, Esq.

Class 85.—Royal Late Cooking.

No entry.

Class 86.—Stirling Castle.

1. John Lee, Esq.
2. E. W. Caddick, Esq.

Class 87.—Tibbett's Pearmain.

No entry.

Class 88.—Tower of Glammis.

1. Walpole Greenwell, Esq., Godstone (gr. W. Lintott).
2. Mr. J. Howard.

Class 89.—Waltham Abbey Seedling.

No entry.

Class 90.—Warner's King.

1. John Lee, Esq.
2. Jeremiah Colman, Esq.

Class 91.—Any other variety not named above.

Four Prizes, 7s., 6s., 5s., 4s.

An Exhibitor may only enter one variety in Class 91, in which Class eight Fruits must be shown to a dish for the Judges to be able to taste two of them.

1. Col. the Hon. C. Harbord.
2. Executors of J. K. D. Wingfield-Digby, Esq.
3. John Lee, Esq.
4. Jeremiah Colman, Esq.

CHOICE DESSERT PEARS.

Class 92.—Beurré Alexander Lucas.

1. Executors of J. K. D. Wingfield-Digby, Esq.
2. Col. G. B. Archer-Houblon (gr. C. Ross).

Class 93.—Beurré Dumont.

No entry.

Class 94.—Beurré Hardy.

1. Mrs. H. St. Vincent Ames.
2. Col. G. B. Archer-Houblon (gr. W. Harrison).

Class 95.—Beurré Superfin.

1. Executors of J. K. D. Wingfield-Digby, Esq.
2. Nicholas R. Page, Esq.

Class 96.—Charles Ernest.

1. Lord Poltimore.
2. No award.

Class 97.—Comte de Lamy.

1. Col. G. B. Archer-Houblon (gr. W. Harrison).
2. Mr. A. Tidy.

Class 98.—Doyenné du Comice.

1. F. Leverton Harris, Esq., M.P., Dorking (gr. J. McDonald).
2. Lord Poltimore.

Class 99.—Durondeau.

1. Col. the Hon. C. Harbord.
2. Executors of J. K. D. Wingfield-Digby, Esq.

Class 100.—Easter Beurré.

1. Col. G. B. Archer-Houblon (gr. W. Harrison).
2. Executors of J. K. D. Wingfield-Digby, Esq.

Class 101.—Émile d'Heyst.

1. Col. the Hon. C. Harbord.
2. Lord Poltimore.

Class 102.—Glou Morceau.

1. Col. the Hon. C. Harbord.
2. J. Westmacott, Esq.

Class 103.—Joséphine de Malines.

1. Executors of J. K. D. Wingfield-Digby, Esq.
2. Capt. Farwell, J.P.

Class 104.—Louise Bonne of Jersey.

1. Nicholas R. Page.
2. M. Michaelis, Esq.

Class 105.—Marie Louise.

1. Col. the Hon. C. Harbord.
2. Executors of J. K. D. Wingfield-Digby, Esq.

Class 106.—Nouvelle Fulvie.

1. Executors of J. K. D. Wingfield-Digby, Esq.
2. Lord Howard de Walden.

Class 107.—Pitmaston Duchess.

1. F. Leverton Harris, Esq., M.P.
2. Capt. Farwell, J.P.

Class 108.—President Barabé.

1. Col. the Hon. C. Harbord.
2. No award.

Class 109.—Thompson.

1. Col. the Hon. C. Harbord.
2. Executors of J. K. D. Wingfield-Digby, Esq.

Class 110.—Winter Nelis.

1. J. B. Fortescue, Esq.
2. Col. the Hon. C. Harbord.

Class 111.—Any other variety not named above.

Four Prizes, 7s., 6s., 5s., 4s.

An Exhibitor may only enter one variety in Class 111, in which Class eight Fruits must be shown to a dish for the Judges to be able to taste two of them.

1. Executors of J. K. D. Wingfield-Digby, Esq.
2. R. J. Lambert, Esq.
3. Jeremiah Colman, Esq.
4. The Marquis of Northampton.

LIST OF FRUITS CERTIFICATED BY THE
ROYAL HORTICULTURAL SOCIETY, 1883-1905 (inclusive).

APPLES.

Albury Park Nonesuch Seedling. January 12, 1892. A.M. A large and fine showy fruit, stated to have been grown for over a hundred years.

Allen's Everlasting. March 14, 1899. F.C.C. (1884 Report.)

Allington Pippin. November 13, 1894. F.C.C. (Syn. 'South Lincoln Beauty.')

Armored. May 25, 1892. F.C.C. Medium-sized flat fruit, late, dessert.

Ashmead's Kernel Improved. March 8, 1892. A.M. A better bearer than the ordinary variety (for which, see 1884 Report).

Atalanta. November 10, 1891. A.M. Fruit, bright yellow, tinted with crimson. A seedling from 'Scarlet Nonpareil.' Said to be a strong and healthy grower and good bearer.

Ballinora Pippin. November 22, 1898. A.M. Fruit very large, flattened, round; colour deep blood-crimson; eye very large, open, in a deep slightly ridged depression; stalk short, in a small deep depression; flesh crisp.

Barnack Beauty. March 14, 1899. A.M. (1884 Report.)

Bartlett's Glory. September 12, 1893. A.M. Somewhat resembles 'Cellini.'

Bassaleg Pippin. November 21, 1899. A.M. Medium size, deep, round; skin yellow and heavily striped with bright red on the exposed side; eye closed and set in a shallow basin; stalk short, thick, and set in a deep cavity; flesh white, crisp, juicy.

Beauty of Bath. August 9, 1887. F.C.C. (1884 Report.)

Beauty of Kent. January 29, 1901. A.M. (1884 Report.)

Beauty of Stoke. October 14, 1890. F.C.C. Fruit large, solid, conical, of a uniform green russet, somewhat resembling 'Alfriston.'

Bella. October 4, 1892. A.M. (Syn. 'The Gem.')

Belle de Boskoop. January 12, 1897. A.M. (1884 Report.)

Ben's Red. September 12, 1899. A.M. Medium size, flattish round, nearly covered with deep scarlet; eye closed in a shallow basin; stalk short, and deeply inserted; handsome and even in form; flesh firm.

Bismarck. October 11, 1887. F.C.C. (1888 Report.)

Blue Pearmain. March 10, 1896. F.C.C. (1884 Report.)

Bow Hill Pippin. October 24, 1893. A.M.

Brabant Bellefleur. January 29, 1901. A.M. (1884 Report.)

Bramley's Seedling. October 11, 1883. F.C.C. (1884 Report.)

Byford Wonder. November 28, 1893. A.M. Fruit large, greenish-yellow; flesh tender, juicy.

Cardinal. August 11, 1896. A.M.

Charles Ross. October 10, 1899. F.C.C. Fruit over the average size for dessert, round, and of beautiful shape; eye large and open, in a

MURRAY'S BULBS & SEEDS

Produce the Finest Blooms.

*Having our own Farms in Holland
we can supply Finest Quality
Goods at Lowest Prices.*

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FARMS:
AKERSLOOT, HOLLAND.

NEW MAINCROP PEAS.

SHARPE'S STANDARD.

(First Class Certificate, R.H.S., 1900.)



Raised in our own Trial Grounds. We consider this new pea the acme of perfection in the Alderman type, and immensely superior to that well-known variety. Height, five feet; haulm strong; pods chiefly in pairs, long, straight, and of handsome appearance, peas large and of fine colour and superb flavour. *Standard* is a great advance upon any pea of this class at present in commerce, and unequalled and matchless for either exhibition or table.

WHOLESALE PRICE ON APPLICATION.

CHARLES SHARPE & CO., Limited, SLEAFORD.

very shallow basin ; stalk short and thick, not deeply inserted ; flesh very crisp.

Chelmsford Wonder. November 10, 1891. F.C.C. A handsome and promising late culinary variety, large ; skin clear yellow, tinged with red on the more exposed side.

Clapham Beauty. November 24, 1896. A.M. Medium size, flat, greenish-yellow, brightly streaked with crimson on the cheek ; eye large, set in a very shallow basin ; stalk thin, set in a depression ; flesh white, very melting, sweet and juicy ; dessert.

Claygate Pearmain. January 29, 1901. A.M. (1884 Report.)

Coronation. October 21, 1902. A.M. Fruit of medium size, very similar in appearance to 'Cox's Orange Pippin,' but quite distinct in flavour ; stalk thin and about one inch in length, inserted in a moderately deep russety even cavity ; flesh short, crisp, and of excellent flavour.

Diamond Jubilee. February 26, 1901. A.M. Large and of good shape ; skin yellow, slightly flushed with red on the exposed side ; eye large and half closed, set in a rather deep basin ; stalk short and fleshy, often obliquely inserted almost on a level with the base of the fruit ; flesh white ; cooking.

Early Victoria. August 15, 1899. A.M. As a market variety. Fruit rather large, conical ; eye prominent and closed ; stalk nearly an inch long and deeply inserted.

Easter Orange. April 27, 1897. A.M. For the time of year an Apple of very good flavour and of tender flesh, not unlike 'Cox's Orange,' but more distinctly conical and more evenly streaked with crimson and orange all over. Stalk very short and deeply inserted. Eye very like that of 'Cox's Orange.'

Edward VII. March 25, 1903. A.M. Fruit large, round, of good shape ; skin yellow, covered with brown russety dots ; eye full and open ; stalk half-inch long, thin, and inserted in a small russety cavity ; flesh firm, crisp. ('Blenheim Orange' × 'Golden Noble'.)

Gabvalva. February 27, 1900. A.M. Fruit rather large, flattish ; eye half closed, set in a moderately shallow basin ; stalk short and deeply inserted ; skin yellow, flushed with red and streaked on the exposed side, covered with minute russety dots ; flesh firm, crisp.

Gascoyne's Seedling. October 11, 1887. F.C.C. (1884 Report.)

Goodwin Pippin. March 10, 1896. A.M. Winter use, dessert and kitchen.

Grantonian. February 13, 1883. S.C.C.

Grenadier. October 11, 1883. F.C.C. (1884 Report.)

Hambling's Seedling. October 10, 1893. F.C.C. Fruit large, round, pale yellow, very distinct ; kitchen.

Hector Macdonald. October 4, 1904. A.M. Very large and of handsome shape, intermediate between 'Peasgood's Nonesuch' and 'Lane's Prince Albert' ; flesh firm.

High Canons. April 22, 1884. F.C.C. A solid, heavy Apple, of good flavour, and evidently an excellent keeper. The fruits sent were 2 to 3 inches wide, slightly angular, with a deep open eye and short stalk. Its colour is a clean yellow, with a few streaks of crimson on the side to the sun.

Horthead's Pearmain. January 23, 1900. A.M. (1884 Report.)

Invincible. October 11, 1898. A.M. Very large and heavy; skin green with a dull red cheek; eye open and very deeply inset.

Jacquin. April 11, 1893. F.C.C. (1884 Report.)

James Grieve. October 12, 1897. A.M. Small eye, somewhat depressed; long slender stalk, deeply inserted; skin pale yellow, brightly flecked with crimson; good keeper.

Kane's Seedling. October 8, 1889. A.M. Distinct early variety, medium size, conical; skin pale yellow, shaded with red.

King Harry. October 4, 1892. A.M. (1884 Report.)

King of Tompkins County. March 27, 1900. A.M. (1884 Report.)

King's Acre Bountiful. October 4, 1904. A.M. Large, roundish, conical; skin pale yellow, slightly flushed on the sunny side; stalk 1 inch long, inserted in a moderate russet cavity; eye partly closed, in a shallow basin; flesh brisk; culinary.

King's Acre Pippin. March 23, 1897. A.M. (Syn. 'Cranston's Pippin.') Medium-sized, oblate, slightly angular, heavily covered with russet, especially on the upper side, lower side clear; stalk thin, half-inch long, deeply inserted; eye partly open, set in a shallow puckered cavity; flesh greenish-yellow, tender, sweet.

Lady Falmouth. November 23, 1897. A.M. Medium size to small, round, flat; eye in a shallow depression; very short stalk in a narrow opening; colour very deep bright crimson.

Lady Pilkington. January 31, 1899. A.M. Medium size, pale yellow on the shaded side, flushed with red where exposed; eye closed, set in a shallow basin; stalk thick and very short, in a deep cavity; flesh brisk and pleasantly acid.

Lady Sudeley. September 9, 1884. F.C.C. (Syn. 'Jacob's Strawberry.')

Lamb Abbey Pearmain. March 12, 1901. A.M. (1884 Report.)

Langley Pippin. August 23, 1898. A.M. 'Gladstone' × 'Cox's Orange.' Like 'Gladstone,' early, ribbed (slightly) and acid, but like 'Cox's Orange' in general shape, stalk, eye (exactly), and delicious flavour.

Livermere Favourite. November 24, 1896. As a market variety, medium-sized, brilliantly coloured.

Lord Hindlip. February 8, 1898. F.C.C. Medium size, flat at the base, rising into a cone, somewhat shouldered; eye small and depressed; stalk slender and rather deeply inset; brightly coloured with streaks of crimson, spotted with russet. December to February.

Lord Stradbroke. January 3, 1905. A.M. Fruit very large; skin yellow, heavily suffused with red, especially on the exposed side, and covered with small minute russet dots; eye open, with reflexed segments set in a shallow corrugated basin; stalk very short and thick, set in a deep russet cavity.

May Queen. February 9, 1892. A.M. (1888 Report.)

Middle Green. October 13, 1903. A.M. 'Frogmore Prolific' × 'Blenheim Orange.' Medium size, of the shape and with the eye of 'Cox's Orange'; skin yellow, striped and spotted with red on the sunny side; stalk half-inch long, thin, and deeply inserted in a russet cavity; flesh rather soft.

Mr. Gladstone. August 14, 1883. F.C.C. (1888 Report.)

Mrs. John Seden. October 11, 1898. A.M. Small, round, flat, apricot-yellow; eye open, without any depression; stalk in a depression. A marvellous bearer.

Mrs. Phillimore. November 7, 1899. A.M. A medium-sized, flattish, angular Apple with prominent crown ridges. The colour is bright red on the sun side and pale green on the shaded side. The large half-open eye is deeply set. Stalk short, deeply inserted.

Monstrous Incomparable. October 18, 1892. A.M. Very large pale yellow fruits greatly resembling 'Golden Noble.'

Newton Wonder. December 13, 1887. F.C.C. A large culinary fruit obtained by crossing 'Dumelow's Seedling' with 'Blenheim Orange.' It is a high-coloured fruit, partaking something in form of both parents.

Norfolk Beauty. October 15, 1901. A.M. December 9, 1902. F.C.C. 'Warner's King' × 'Dr. Harvey.' Fruit large, pale green changing to yellow, in appearance intermediate between the two parents.

Norman Pippin. January 23, 1900. A.M. Medium size, deep, round; skin greenish-yellow, spotted with russety dots; eye nearly closed, in a deep cavity; stalk thin, one inch long and deeply inserted; flesh white, soft.

Oaklands Seedling. May 23, 1894. A.M. Fair size, somewhat flattened, pale in colour; flesh melting, sweet and richly flavoured; late dessert.

Ontario. May 25, 1898. A.M. Large, roundish, angular, colour clear yellow, much striped and flushed red, next the sun; the stalk an inch long, deeply inserted; eye open, also deep. The flesh is soft and very pleasant eating; it is evidently a good keeper.

Opal. December 10, 1895. A.M. Fruit of medium size and pale yellow; flesh tender and briskly flavoured.

Parroquet. October 24, 1899. A.M. Medium size, conical; eye closed in a shallow basin; stalk short and set in a shallow cavity; skin nearly covered with deep red; flesh white.

Pay-the-Rent. October 29, 1895. A.M. Fruit round, full, medium-sized, greenish-yellow, slightly russety, and about as firm as 'Dumelow's Seedling.'

Perkins A1. February 12, 1884. F.C.C. A handsome Apple, beautifully coloured, with tender flesh and pleasantly sub-acid.

Prince Edward. February 9, 1897. A.M. A medium-sized fruit, yellow striped with red; in appearance intermediate between 'Cox's Pomona' and 'Cellini'; soft and sweet, juicy and pleasant.

Reinette de Canada. January 29, 1901. A.M. (1884 Report.)

Rembrough. September 10, 1895. A.M. A solid culinary Apple, large size, green, but slightly coloured, with deep eye.

Rev. W. Wilks. September 20, 1904. A.M. 'Peasgood's Nonesuch' × 'Ribston Pippin.' Culinary. Fruit very large, of fine form, creamy-yellow in colour and sparsely covered with minute brown and scarlet dots; eye closed, with long segments, set in a moderately deep basin, slightly furrowed, stalk one inch long, thick, and deeply inserted in a wide deep cavity, lined with russet.

Rival. October 9, 1900. A.M. Fruit above medium size; round eye,

open, with reflexed segments, in a rather shallow basin; stalk half-inch long and deeply inserted; skin yellow on the shaded side, nearly covered with red on the exposed side; flesh firm, juicy.

Roi d'Angleterre. February 13, 1894. A.M. Large handsome fruit, yellow, much like 'Newton Pippin' in flavour, and a little similar to 'Alfriston' in appearance. It is a good keeper, and a good cropper.

Royal Late Cooking. January 14, 1896. A.M. Large, smooth, roundish, heavy; eye large, slightly depressed; stalk very short, set in a wide slight depression; pale greenish-yellow in colour.

St. Everard. September 11, 1900. A.M. Rather below medium size, perfect form; eye prominent, open, with reflexed segments; stalk three-quarters of an inch long, thin, inserted in a shallow cavity; skin nearly covered with red, and spotted with pale spots; flesh crisp, tender.

Saint Martin's. November 24, 1896. A.M. Medium size, conical; skin inclined to russet, but flaked all over with crimson; small eye, set in a rather deep basin; stalk short, set in a wide but deep depression; flesh yellowish; late keeping, dessert.

Sandringham. October 11, 1883. F.C.C.

Sanspareil. February 14, 1899. F.C.C. Over medium size, conical, yellow, flushed with bronze on the exposed side; eye small and open, set in a deep basin, slightly ribbed; stalk thin and very short, inserted in a deep cavity; flesh white, crisp.

Scarlet Nonpareil. February 26, 1901. A.M. (1884 Report.)

September Beauty. October 13, 1885. F.C.C. (1884 Report.)

Stainway Seedling. December 19, 1899. A.M. Fruit large, conical; eye closed and puckered, in a very shallow basin; stalk thin, half-inch long, and not very deeply inserted; skin a bright pale yellow; flesh rather soft and somewhat acid.

Standard Bearer. February 14, 1893. A.M. A symmetrical oval-shaped Apple, tender in flesh and of good quality.

Star of Devon. November 21, 1905. A.M. Fruit of medium size, deep round, even in outline; the skin nearly covered with brilliant red; eye partly closed, in a shallow basin; stalk thin, half-inch long, set in a moderate and russety cavity; flesh white and of a pleasant flavour. The tree is said to be a shapely grower, a great bearer, and the fruit to keep until very late. A dessert or cooking variety.

Stubbs' Seedling. November 26, 1895. A.M. Medium size and flat; colour a deep shining scarlet; flesh white, tender, juicy.

Tamplin. November 4, 1902. A.M. This is exactly similar to 'American Mother' in shape and colour, but is later, and quite distinct, the flesh being more solid, and with a pleasant acidity in the flavour. It should prove a useful dessert variety. It was raised by a Mr. Tamplin of Malpas, Mon., 150 years ago, and is known as the 'Cissy Apple.' The tree is stated to be a slow grower, of pendulous habit, and a great bearer.

The Houblon. December 17, 1901. A.M. 'Peasgood's Nonesuch' × 'Cox's Orange Pippin.' Size of 'Cox's Orange,' of perfect form; skin yellow, heavily suffused and striped with bright red; eye large and open, set in a shallow basin; stalk short and not very deeply inserted; flesh crisp, juicy.

Thomas Rivers. October 4, 1892. F.C.C. (Syn. 'Rivers' Codlin.') Large, ovate. A very fine cooking fruit and a very free bearer.

Tyler's Kernel. November 13, 1883. F.C.C. (1884 Report.)

Venus' Pippin. September 12, 1899. A.M. Medium size, deep, round, pale green, changing to yellow; eye closed and in a shallow basin; stalk three-quarters of an inch long and deeply inserted.

Warner's Seedling. March 13, 1883. F.C.C. (1884 Report.)

Wealthy. September 26, 1893. A.M. (1888 Report.)

Werder's Golden Reinette. October 4, 1904. A.M. (1884 Report.)

White Transparent. August 13, 1895. A.M. Large, conical, brisk-flavoured, early fruit of the colour of semi-transparent yellowish ivory or wax.

Williams' Favourite. August 27, 1895. A.M. A very highly coloured early variety.

CRABS.

Frittingham's Victoria. September 20, 1904. A.M. Fruit flat-round, of a bright red colour and very ornamental.

Transcendent. August 27, 1895. A.M. (Syn. 'Transparent Crab.') Fruit large and good for a Crab, and exceedingly ornamental.

Veitch's Scarlet. September 20, 1904. A.M. 'Red Siberian' Crab × 'King of the Pippins' Apple. A very handsome brilliant red fruit, of a roundish-oval shape, and borne in large clusters.

BANANA.

Lady's Finger. July 7, 1891. F.C.C. Well-flavoured fruits; short, with very thin skin, and remarkably sweet and good.

BLACKBERRIES.

Kittatinny. August 10, 1897. A.M. Not quite so large a fruit as 'Wilson Junior,' but immensely superior in flavour, and earlier.

Mitchell's Seedling. September 7, 1897. A.M. Seedling from common Blackberry.

Wilson Junior. August 13, 1901. A.M. Fruit large, black, shining, abundantly produced.

BULLACE.

Langley Bullace. November 4, 1902. A.M. October 18, 1904. F.C.C. For great cropping qualities, size, and general excellence.

CHERRIES.

Early Rivers. July 26, 1898. F.C.C. Fruit large, deep black, early. Empereur François. August 9, 1892. F.C.C. A tender white-fleshed variety.

Emperor Francis Joseph. August 9, 1887. F.C.C.

Géant d'Hedelfingen. August 13, 1895. F.C.C. Large pale fruit of very superior texture.

Noble. July 25, 1899. F.C.C. Fruit large, firm, deep blood-red in colour.

CURRANTS.

Boskoop. July 18, 1902. F.C.C.

The Comet, Red. July 28, 1896. A.M. The bunches were six, some even eight, inches long; the berries very large, dark red, transparent, and as many as twenty-eight on a bunch.

DAMSON.

Rivers' Early. August 14, 1900. A.M. Fruit small, perfectly round, with a very short stalk, deep blue-black colour, with green flesh of excellent flavour and like the Damson, though much larger.

FIGS.

Bourjassote Grise. August 9, 1892. F.C.C. Medium-sized.

Gourand Noir. August 9, 1892. F.C.C. Dark purple, ovate, medium-sized variety, very free-fruiting.

Large Black Douro. August 23, 1892. F.C.C. Large long fruit of dark purple colour, very free-fruiting.

Monaco Bianco. August 9, 1892. F.C.C. Green, very rich.

Nebian. August 9, 1892. F.C.C. A very large deep green variety, with deep red flesh.

Pingo de Mel. May 17, 1892. F.C.C.

St. John. July 8, 1890. F.C.C.

Violette Sepor. August 9, 1892. F.C.C. Medium size, deep green, shaded violet, remarkably rich.

GOOSEBERRIES.

Golden Gem. August 10, 1897. A.M. 'Antagonist' × 'Whitesmith.' Fruits of a deep buff-yellow.

Gunner. July 30, 1901. A.M. Fruit large, round, brownish-yellow, hairy.

Howard's Lancer. August 13, 1901. A.M. Fruit large, smooth, green.

Langley Beauty. July 28, 1896. F.C.C. 'Yellow Champagne' × 'Railway.' Berries very large, of a buff colour, semi-transparent, somewhat hairy.

Langley Gage. July 28, 1896. A.M. 'Pitmaston Greengage' × 'Telegraph.' Berries between medium and small, silvery-white, transparent. An enormous bearer.

GRAPES.

Appley Tower Seedling. October 22, 1889. A.M. Berry medium size, black, ovate, with a sweet Muscat flavour.

Cape Muscat. September 12, 1893. A.M. Bunches and berries of good size, ovate, black, with a decided Muscat flavour.

Chasselas Napoléon. October 27, 1891. F.C.C. Berries large, oval, white with an amber tint, fleshy, and of a pleasant Sweetwater flavour.

Chasselas Vibert. October 4, 1892. A.M. A very early white Sweet water, berries round, clear skinned.

Diamant Traube. September 17, 1889. F.C.C. Medium-sized, ovate, greenish-white Sweetwater.

Directeur Tisserand. November 23, 1897. A.M. Berries, though not large, are intensely black, oval, with a fine bloom.

Imperial Black Seedling. November 4, 1902. A.M. Bunch of medium size, rather long and shapely; berries large, oval, deep black; flesh firm, crisp and of good flavour. The variety is said to be a good grower, and very free setter.

Lady Hastings. July 25, 1899. F.C.C. A vigorous sport from 'Muscat Hambro.' Bunches large and heavily shouldered, berries large, roundish oval, covered with a deep blue-black bloom.

Lady Hutt. December 9, 1890. F.C.C. Bunch long, tapering; berries medium-sized, round, of a pale amber colour; flesh firm, juicy, and with a rich Sweetwater flavour.

Marchioness of Downshire. October 26, 1897. A.M. 'White Gros Colmar' × 'Muscat of Alexandria.' A fine white grape; berries almost round, of good keeping qualities.

Muscat of Hungary. October 6, 1891. A.M. A small, richly flavoured form of 'Muscat of Alexandria.'

Prince of Wales. September 25, 1900. A.M. Sport from 'Mrs. Pince.' Berries large, oval, blue-black. Bunches large, long and tapering.

Reine Olga. October 24, 1899. A.M. October 29, 1901. F.C.C. An outdoor variety with long tapering bunches, having small shoulders and round red berries.

White Gros Colmar. October 4, 1892. F.C.C. Fruit large, nearly round, of a pale yellow colour; flesh firm, juicy.

MEDLAR.

The Royal. January 10, 1888. F.C.C. A small fruit of a sweet taste; it is said to be superior to the common forms, and to make an excellent preserve.

MELONS.

Advance. July 22, 1890. F.C.C. (Syn. 'Barkham's Seedling.') Scarlet fleshed.

Anthony's Favourite. June 9, 1896. F.C.C. Fruit large, ovate, greenish-yellow.

Barkham's Scarlet. July 14, 1896. A.M. Scarlet fleshed, beautifully netted.

Basing Park. August 13, 1889. F.C.C. Medium size, well netted, green-fleshed.

Bearwood Gem. September 20, 1892. A.M. A very pretty variety.

Beauty of Sion. October 18, 1892. F.C.C. Fruit rather small, bright orange-yellow skin and scarlet flesh.

Benham Park Perfection. May 26, 1885. F.C.C.

Bishop's Favourite. June 25, 1895. A.M.

British Queen. September 6, 1898. F.C.C. Fruit almost round; skin pale yellow, densely netted; flesh white and very deep.

Buscot Park Hero. May 23, 1900. A.M. Fruit round, yellow, heavily netted; flesh white.

Centre of England. May 23, 1894. A.M. Scarlet-fleshed.

Conference. October 10, 1905. A.M. Fruit of medium size, round, heavily netted; flesh green, thick and of excellent flavour.

Countess. July 9, 1889. F.C.C. Large, golden-yellow, prettily netted.

County Councillor. August 8, 1893. A.M.

Croxteth Jubilee. October 12, 1897. A.M. Slightly oval; skin yellow, slightly netted, deeply ribbed; flesh scarlet.

Diamond Jubilee. May 26, 1897. A.M. Round, scarlet-fleshed, well netted.

Eclipse. June 12, 1894. A.M. Large, oval, green, well netted, flesh green.

Effingham Perfection. July 14, 1896. A.M.

Ely's Seedling. September 9, 1890. A.M. A good sweet green-fleshed variety.

Emerald Gem. July 26, 1892. A.M. A very distinct green-fleshed variety.

Empson's Seedling. June 14, 1898. A.M. A round fruit of fair size, well netted, with yellow skin and white flesh.

Epique. July 9, 1895. A.M.

Excellent. June 4, 1901. A.M. Fruit of medium size, round; skin whitish and well netted; flesh almost a salmon colour, deep.

Excelsior. October 26, 1897. A.M. Fruit quite round, beautifully netted; white flesh.

Fairlawn Empress of India. August 28, 1894. A.M. Fruit of medium size, roundish ovate, pale yellow; flesh very pale green, melting, and of excellent quality.

Fiscal Problem. October 13, 1903. A.M. Medium size, round; skin a rich yellow and heavily netted; flesh scarlet, thick.

Free Chase Favourite. October 9, 1900. A.M. Raised from 'Hero of Lockinge' and of the same colour; but the fruit is deeper and differently netted, with a very small cavity in the centre.

Free Chase Scarlet. July 3, 1900. A.M. Very large, beautifully netted, round; yellow skin; flesh red and very thick.

Freston Tower. June 9, 1896. F.C.C.

Frogmore Orange. June 9, 1896. A.M.

Frogmore Scarlet. August 24, 1897. A.M. Fruit oval, and well netted, with deep flesh.

Frogmore Seedling. June 6, 1893. A.M. A white-fleshed variety, having a bright yellow skin.

Glenhurst Perfection. September 25, 1888. F.C.C.

Guntton Orange. May 17, 1892. F.C.C. Medium size, almost round, green-fleshed, skin pale yellow.

Guntton Scarlet. October 11, 1898. A.M. Quality of 'Austin's,' flavour and skin of 'Hero,' and scarlet flesh of 'Blenheim.'

Halstead Favourite. September 8, 1891. A.M. Green-fleshed, well netted.

Hardy Scarlet. August 15, 1899. A.M. Fruit rather small; skin green, ribbed and well netted; flesh scarlet, melting.

Harris's Favourite. August 11, 1896. A.M.

Hero of Isleworth. August 8, 1893. A.M.

Highlands Hybrid. July 9, 1890. A.M. Scarlet-fleshed variety.

Hollanden Favourite. June 26, 1883. F.C.C. The result of a cross between 'Read's Scarlet-flesh' and 'Earl of Beaconsfield,' medium-sized, round, prettily netted, scarlet-fleshed.

Ingestre Hybrid. May 9, 1893. A.M. A hybrid between 'Hero of Lockinge' and 'Countess.' Fruit of good average size, of very decided yellow, and slightly netted; flesh white.

La Favourite. June 9, 1885. F.C.C. A green-flesh variety of moderate size, but excellent flavour, particularly rich and sweet.

Late Perfection. November 6, 1900. A.M. Fruit large, oval; a dull yellowish-bronze colour, beautifully netted all over; flesh firm but melting, green.

Lee's Perfection. July 25, 1893. A.M. (Not described.)

Longleat Perfection. July 10, 1885. F.C.C. Fruit large, round, smooth, pale greenish-yellow; flesh white, very melting, sweet. It is a seedling from 'Cashmere,' which it much resembles.

Lord Edward Cavendish. April 26, 1898. A.M. Fruit bright primrose colour, excellently netted, white and deep flesh.

Marquis' Favourite. September 29, 1903. A.M. Fruit of medium size, roundish-oval; skin deep yellow and heavily netted; flesh pale, very deep.

Meritorious. August 11, 1891. A.M. Fruit large, roundish, well netted; flesh scarlet, very sweet.

Middlesex Hero. August 13, 1895. A.M.

Mrs. Herrin. September 7, 1897. A.M. Fruit round, densely netted with very deep white flesh.

Nugget. July 9, 1895. A.M.

President Loubet. July 7, 1903. A.M. Medium size, roundish oval; skin yellow and heavily netted; flesh deep golden, thick.

Pride of Ingestre. May 8, 1894. A.M. Fruit small, round, slightly netted; flesh white.

Regent's Park. September 1, 1903. A.M. Large, round; skin pale yellow and heavily netted; flesh pale apricot colour.

Regina. July 3, 1903. A.M. Fruit large, roundish-oval; skin greenish-yellow and heavily netted; flesh deep green, thick and of excellent flavour.

Ritchings Perfection. June 7, 1892. A.M.

Royal Prince. August 8, 1893. A.M.

Royalty. October 23, 1900. A.M. Large, golden, handsomely netted; flesh white, deep.

Syon House Seedling. July 8, 1890. A.M. Scarlet-fleshed.

Syon Perfection. July 13, 1897. A.M. Oval, deep green skinned, slightly netted; flesh red and very deep.

The Earl's Favourite. September 10, 1895. F.C.C. (Not described.)

The Goodwood. August 14, 1883. F.C.C. Large, with greenish-white flesh, very evenly netted.

The Islander. May 17, 1904. A.M. Large, round, pale green and heavily netted; flesh green, deep.

The Lady. June 11, 1895. A.M. Medium size, skin pale; flesh pale, melting.

The Peer. October 7, 1902. A.M. Fruit rather large, round, yellow, well-netted; green flesh, and of very rich flavour.

The President. June 10, 1902. A.M. Large, roundish-oval; skin green and deeply netted; flesh scarlet, thick, melting.

Victoria Cross. July 8, 1890. A.M. Scarlet-fleshed variety.

Westley Hall. October 14, 1890. F.C.C. Large, oval-shaped, well netted; scarlet flesh, tender, and of rich flavour.

Westonbirt Seedling. November 10, 1903. A.M. Medium size, oval with a pale green skin heavily netted; flesh deep green, thick, melting.

Wythes' Duchess. September 1, 1903. A.M. Fruit large, roundish-oval; skin green, heavily netted; flesh scarlet, deep, melting, and very rich in flavour. Raised from 'Best of All' × 'Syon House.'

Wythes' Scarlet. October 11, 1898. A.M. Small, conical, dark green, densely netted; scarlet flesh.

Wythes' Seedling. June 9, 1891. A.M. Well-flavoured, white flesh.

Wythes' Victoria. July 5, 1901. A.M.

NECTARINES.

Cardinal. May 19, 1896. F.C.C. As a forcing variety; fruits large, finely coloured.

Early Rivers. July 26, 1892. F.C.C.

Goldoni. July 14, 1885. F.C.C.

Lockerby Hall. July 3, 1900. A.M. Seedling from 'Lord Napier.' The fruit is somewhat similar to the parent in size and colour.

Précoce de Croncels. July 27, 1897. A.M.

ORANGES.

Edith. December 12, 1893. F.C.C. Fruits of good size, roundish-ovoid, pale yellow, very juicy.

Egg. January 26, 1904. A.M. Fruit above medium size, round, skin very bright orange, thin.

Silvermere Seedling. March 22, 1892. A.M. Fruit of large size, deep orange colour.

Sustain. February 10, 1885. A.M.

PEACHES.

Alexander. May 8, 1883. F.C.C.

Amsden June. June 7, 1892. A.M.

Duchess of Cornwall. June 4, 1901. A.M. Fruit rather large, deep, round, with a slight nipple at the apex; skin pale, flushed with red on the exposed side; flesh white, melting, adhering slightly to the stone.

Duchess of York. September 12, 1893. A.M. Fruit large, conical, pale coloured.

Duke of York. May 20, 1902. A.M. Fruit large, deep, round; with a deep suture and prominent nipple; skin pale and nearly covered with a light red colour.

Late Devonian. September 25, 1894. F.C.C.

Libra. August 4, 1903. A.M. Fruit rather large; skin pale slightly spotted and flushed with red; shape deep round; flesh melting, parting freely from the stone.

Peregrine. August 18, 1903. A.M. May 30, 1905. F.C.C. Fruit large, with a deep suture; skin covered with red, with spots of a deeper shade; flesh soft, melting, clinging to the stone. Midseason or late.

Thomas Rivers. June 28, 1898. F.C.C. (Not described.)

Violette Hâtive. August 15, 1905. F.C.C. This is a very old variety, also known as English Galande.

PEARS.

Aspasia Ancourt. August 11, 1896. A.M. Fruit bluntly pyriform with eye and stalk both deeply inset. Of medium size, yellowish-green when ripe.

Belle Julie. October 13, 1894. A.M. (1887 Report.)

Beurré Dubuisson. November 13, 1894. A.M. November 20, 1900. F.C.C. (1887 Report.)

Beurré Fouqueray. October 10, 1893. F.C.C. (1887 Report.)

Beurré Perran. January 14, 1896. A.M. Large, somewhat uneven, roundish, a little like 'Passe Crassane' but distinct; eye small and open, not depressed; stalk very long, thick, marked with a projecting buttress, and a swollen knot or lump near the inset, not depressed; yellow, covered all over with rough russet. January to February.

Charles Ernest. December 4, 1900. A.M. Fruit large and varying in shape; skin yellow, slightly flushed with red on the exposed side; eye closed, with small erect segments, set in a shallow basin; stalk $\frac{3}{4}$ inch long rather obliquely inserted and surrounded with russet; flesh white.

Conference. November 4, 1885. F.C.C.

Directeur Hardy. October 12, 1897. A.M. Bluntly pyriform; short stalk, with no depression; very small eye, in very slight depression; skin brown and rough, with red tinge on sunny side.

Double de Guerre. November 21, 1899. A.M. Stewing, fruit rather large, pyriform; skin greenish-yellow on the shaded side, and mottled with russet, deeply flushed with red, on the exposed side; eye open, with erect segments, and set in a very shallow basin; stalk set in a small cavity obliquely at the point.

Doyenné d'Alençon. January 9, 1900. A.M. (1887 Report.)

Doyenné du Comice. November 6, 1900. F.C.C. (1887 Report.)

Duchesse de Bordeaux. February 10, 1885. F.C.C. (1887 Report.)

Émile d'Heyst. November 7, 1899. F.C.C. (1887 Report.)

General Wauchope. December 17, 1901. A.M. 'Ne plus Meuris' × 'Duchesse d'Angoulême.' Fruit of medium size, in shape like 'Marie Louise,' eye open, set in a shallow basin; stalk 1 inch long, inserted in a small cavity and surrounded with deep russet; skin pale green, covered with minute brown dots and more or less suffused with russet; flesh soft and free from grittiness.

Grise de Chine. December 9, 1902. A.M. Fruit of medium size, bluntly obovate; skin brownish-yellow, nearly covered with russet; eye small, with no segments, in a small deep funnel-like basin. Stalk $\frac{3}{4}$ inch

long, thin, and inserted on a blunt end. Flesh very juicy, melting, and of very good flavour. The tree is said to be a good bearer, and to be of Belgian origin, where it is said to have been grown for thirty years.

Joséphine de Malines. January 15, 1901. F.C.C. (1887 Report.)

Le Lectier. November 13, 1894. A.M.

Mlle. Solange. August 9, 1887. F.C.C. An obovate green fruit, of fine flavour, hardly so large as the well-known 'Aston Town' pear.

Margaret Marillat. October 10, 1899. A.M. Fruit very large, of a golden-yellow colour when ripe.

Michaelmas Nelis. October 7, 1902. A.M. Fruit of medium size, obovate; skin pale green, and covered with small russety dots; eye large and open, set in a shallow basin; stalk $1\frac{1}{2}$ inch long, inserted in a deep cavity; flesh very melting, juicy, and of excellent flavour.

Nouvelle Fulvie. December 4, 1900. F.C.C. (1887 Report.)

Olivier de Serres. December 18, 1900. A.M. (1887 Report.)

Passe Crassane. February 8, 1898. F.C.C. (1887 Report.)

President Barabé. January 11, 1898. F.C.C. Eye very large and open, filling the entire depression, which is very slight; stalk very short and thick, in a very small depression. Round to ovate; skin rough, bright brown to yellow.

Santa Claus. January 3, 1905. A.M. Fruit large, obovate; skin bronzy-yellow, covered with minute brown dots, and more or less suffused with russet; eye open, with erect segments; stalk 1 inch long, thin and straight. Flesh melting, free from grit, and of excellent flavour.

S. T. Wright. October 4, 1904. A.M. 'Beurré Bachelier' × 'Williams' Bon Chrétien.' Fruit of medium size, tapering gradually to the stalk, which is one inch long and not inserted in a cavity; eye small and open; skin yellow, thickly coated with russet; flesh melting.

The Glastonbury. October 23, 1900. F.C.C. Fruit rather large, somewhat resembling a fine 'Beurré Hardy' in appearance; eye partly open, with erect segments set in a very slight depression; stalk 1 inch long, inserted in small shallow cavity; flesh white.

Triomphe de Vienne. September 26, 1899. A.M. Fruit very large, long; skin yellow when ripe, heavily mottled with russet; flesh melting.

Winter Nelis. January 14, 1902. F.C.C. (1887 Report.)

Winter Orange. March 28, 1899. A.M. Stewing Pear, in form rather like 'Beurré Hardy,' with a rich orange skin.

PINEAPPLE.

James Hunter. October 6, 1891. A.M. Resembling the 'Smooth Cayenne,' but with spiny leaves; fruit extremely juicy and of good flavour.

PLUMS.

(See Report, Journ. R.H.S., vol. xxvi., 1901, p. 613.)

Crimson Drop. October 15, 1901. A.M. A sport from 'Coe's Golden Drop.' Fruit and foliage exactly the same as that variety, but with crimson fruit.

Early Transparent Gage. July 26, 1898. F.C.C. (Report.)

Early Yellow. August 13, 1901. F.C.C. (Report.)

Golden Transparent Gage. September 12, 1893. F.C.C. (Report.)

Late Transparent Gage. August 9, 1892. F.C.C. (Report.)

Monarch. September 25, 1894. F.C.C. (Report.)

President. October 15, 1895. A.M. October 9, 1900. F.C.C.
Fruit very large, oval, almost black. The flesh has a distinct Bullace flavour and parts readily from the stone.

Primate. October 11, 1898. A.M. Very large, egg-shaped, covered with a lovely peach bloom. Cooking or dessert; late.

Rivers' Early. August 13, 1895. F.C.C. (Report.)

Rivers' Late. October 23, 1894. A.M. Fruit of medium size, round, purple, with a fine brisk flavour.

Rivers' Orange. November 1, 1892. F.C.C. Medium size, round, yellow; flesh yellow.

St. Etienne. August 11, 1891. A.M.

September Prolific. September 12, 1905. A.M. A remarkably prolific variety coming into use after 'Victoria' and 'Pond's Seedling' are over. The fruit is very similar to 'Jefferson,' both in size and appearance, and suitable for cooking only.

RASPBERRIES.

Champion. July 12, 1904. A.M. Fruit large, bluntly round, dark red in colour, very sweet, produced in great clusters.

Golden Queen. July 26, 1898. A.M. July 11, 1899. F.C.C. Fruit large, bright yellow. The result of crossing Raspberry 'Superlative' ♀ × *Rubus laciniatus* ♂.

Hornet. July 9, 1889. F.C.C. Old but little known variety, bearing trusses of large, firm fruit.

Lord Beaconsfield. August 14, 1883. F.C.C.

November Abundance. November 4, 1902. A.M. Raised from Raspberry 'Catawissa' ♀ × 'Superlative' ♂. Fruit large, in great clusters, dark red, and of excellent flavour.

Red Diamond. September 6, 1904. A.M. Fruit very large and conical, dark red in colour.

Superlative. July 26, 1888. F.C.C. Berries bluntly pointed, very large, deep crimson; splendid bearer, and vigorous grower.

RASPBERRY-BLACKBERRY HYBRIDS.

Logan Berry. July 13, 1897. A.M. July 21, 1903. F.C.C. Fruit like a very large long pointed Raspberry, but, like the Blackberry, it is destitute of the pithy centre; foliage like that of the Blackberry.

Mahdi. August 15, 1899. A.M. Raspberry 'Belle de Fontenay' × ordinary Blackberry. Like a very large red-violet Blackberry, and the foliage is almost exactly midway between the two parents. Ripens after the Raspberries and before the Blackberries.

STRAWBERRIES.

A. F. Barron. July 10, 1885. F.C.C. A beautiful variety with even conical fruits of a bright scarlet colour, very firm and of good flavour, possessing a pleasant acidity. This was formerly named 'Admiral.'

Auguste Boisselot. July 8, 1890. F.C.C. Very large.

Auguste Nicaise. April 8, 1890. A.M. A good forcing variety.

Bedford Champion. July 4, 1905. A.M. Fruit very large, roundish shape, bright red, with white flesh deeply tinted with pink and a peculiar pleasant acid flavour.

Collis' May Queen. June 26, 1894. A.M. Fruit large and obovoid, deep red, somewhat resembling 'Sir J. Paxton,' but much earlier and of higher flavour than that variety.

Countess. June 15, 1896. F.C.C.

Crescent City. June 24, 1890. A.M. on account of its earliness.

Edouard Lefort. June 15, 1896. F.C.C.

Empress of India. May 17, 1892. F.C.C. Fruits of medium size, pale coloured.

Eythorpe Perpetual. September 20, 1904. A.M. Bluntly round, scarlet, with prominent yellow seeds, flesh pink. 'St. Antoine de Padoue' × another variety.

Givons' Late Prolific. July 2, 1901. A.M. July 22, 1902. F.C.C. 'Waterloo' × 'Latest of All.' Fruit large, wedge-shaped, dark crimson, with bright red flesh.

Guntton Park. July 21, 1891. F.C.C. Fruit of very large size, broad 'cockscumbed,' and of good colour and quality.

Incomparable. July 8, 1890. A.M. Dark red.

King of the Earlies. July 9, 1888. F.C.C.

Lady Suffield. July 25, 1899. F.C.C. Fruit large, wedge-shaped, dark in colour; flesh firm.

Laxton's Latest of All. July 24, 1894. F.C.C.

Leader. May 14, 1895. F.C.C. Fruits large, pale crimson; flesh firm, pale.

Lord Kitchener. July 11, 1899. A.M. Fruit large, firm, deep, round, dark red.

Lord Suffield. July 21, 1891. F.C.C. Fruit large and firm, of excellent quality and appearance.

Lucas. July 9, 1888. F.C.C.

Mentmore. June 29, 1897. A.M. 'Noble' × 'British Queen.'

Monarch. June 25, 1895. F.C.C. Fruit large, cockscumbed, fine clear colour; flesh firm.

Noble. July 1, 1886. F.C.C. Conical fruit, of great size and good flavour, but somewhat soft.

Pauline. June 23, 1885. F.C.C.

Queen Alexandra. July 16, 1901. A.M. Fruit large, conical, very dark in colour, with crimson seeds; flesh firm.

Reward. July 5, 1898. A.M. Not described. June 28, 1904. A.M. 'Royal Sovereign' × 'British Queen.' Fruit very large and resembling 'Royal Sovereign' in shape. Colour a rich scarlet, with prominent seeds; flesh firm.

Rouge Améliorée. August 13, 1895. A.M. Alpine.

Royal Sovereign. June 21, 1892. F.C.C. Medium size, conical, bright scarlet.

St. Antoine de Padoue. August 28, 1900. A.M. Medium size, nearly round, bright scarlet, with prominent seeds; flesh firm. A perpetual fruiting variety raised from 'St. Joseph' × 'Royal Sovereign.'

St. Joseph. September 20, 1898. A.M.

Stevens' Wonder. March 12, 1895. F.C.C. Plants very dwarf; fruit medium size, conical, pale rose colour; flesh pale, somewhat soft.

The Alake. June 28, 1904. A.M. Fruit very large and very variable in shape, colour very dark red, with seeds moderately prominent; flesh solid.

The Khedive. July 22, 1902. A.M. 'Lord Suffield' × 'British Queen.' Fruit of medium size, long, very dark red colour, with prominent seeds; flesh firm.

The Latest. July 12, 1904. A.M. Fruit very large, bluntly wedge-shaped, dark crimson in colour, with prominent yellow seeds, which change to a bright crimson with age; flesh deep red, solid.

The Laxton. June 18, 1901. F.C.C. 'Royal Sovereign' × 'Sir Joseph Paxton.' Fruit large, deep red, firm.

The Roydon. September 29, 1903. A.M. Fruit of medium size, roundish, dark red in colour.

Trafalgar. June 5, 1900. A.M. Fruit large, wedge-shaped, pale red, with prominent reddish seeds; flesh white.

Veitch's Perfection. July 14, 1896. F.C.C. 'British Queen' × 'Waterloo.' The foliage and flavour markedly of 'British Queen' type, and the colour almost as dark as 'Waterloo.'

Veitch's Prolific. July 12, 1898. F.C.C. Berries large, wedge-shaped, bright red in colour, with firm flesh.

Waterloo. July 10, 1885. F.C.C. Fruit large, cockscombed, very dark in colour, and of good quality.

Wonderful. July 1, 1897. A.M. Fruit a very bright red colour, somewhat long and tapering.

A GLIMPSE OF THE COMMERCIAL SIDE OF FRUIT GROWING IN THE UNITED STATES.

By Professor JOHN CRAIG, Professor of Horticulture, Cornell University,
Ithaca, New York.

THE development of the fruit-growing interests of the United States has been marked by several well-defined and significant features. The first of these was the gradual evolution of an American race of fruits. Perhaps it may seem pretentious and somewhat presumptuous to speak of this as an accomplished fact yet, but if we bear in mind the fact that one century ago 90 per cent. of the Apples cultivated in this country were of European origin, that fifty years ago about 40 per cent. were of foreign origin, while at the present time probably less than 10 per cent. of our commercial Apples originated in foreign countries, we must admit that this assertion is not extravagant. Of course the fruits and seeds brought over by the Puritans of New England, the Virginian settlers, the colonists of Nova Scotia and Quebec, formed the basis of the orchards of the North and East, while in the South we are indebted to the Spanish and French adventurers for the various species of Citrus and other sub-tropical fruits which have since been improved, and have become of commercial value in that region.

In the case of the orchard, or tree fruits, evolution has taken place along the lines of adaptation to conditions of climate and soil, through seedling or hybrid production. Much of the improvement has, however, been brought about by chance. In recent years, and more especially since the establishment of the United States Experiment Stations in 1887, systematic and sustained efforts were commenced (and are being continued) to produce new forms of value to the amateur and professional fruit-grower. Varieties, too, with special adaptations, as for instance those which shall meet the needs of certain climates, are being striven for. A notable example of this kind may be cited in the production of Crab Apples able to withstand 40 to 50 degrees Fahr. of frost (the minimum temperatures of Manitoba and the Canadian North-West). The Dominion of Canada Experimental Farms, with which the writer was connected as horticulturist from 1890-97, have made commendable advances in this important enterprise by crossing hardy Russian Apples with the 'Berry Crab,' *Pyrus baccata* of Eastern Europe. The hybrids exhibit exceptional hardiness and bear fruit of Crab-like proportions, which is most acceptable in the wheat-growing country of the North-West.

Again, in the middle western part of the United States the problem of securing orchard fruits of desirable quality and adequate hardiness, or cold-resisting qualities, has been undergoing gradual solution during the last half-century. Here the Apples of Russia are being crossed with the Apples of Europe and their seedlings in America. Notable progress is being made. The native Crab of the Prairie States, *Pyrus ioensis*, has

shown favourable variations both naturally and under cultivation. These improved forms are being crossed with the introduced varieties with the



LOOKING TOWARDS LAKE ONTARIO (CANADIAN SIDE).

view of producing varieties better adapted to the climate of the Middle States than those available at present.



STRAWBERRY GROWING IN WRANGLAND.

With reference to Bush Fruits, Grapes, and Strawberries, it is only necessary to say that practically all the varieties in cultivation in the

United States are the result of accidental or intentional crossing of native with European types. In general, the native American parent seems to have contributed vigour and productiveness, while the European has given size and quality to the fruit. Red and yellow Raspberries are especially striking examples of this type of improvement. Our Grapes of the North-East are either pure-bred natives or hybrids between natives and the European, *Vitis vinifera*. And so it is that nature assisted by man has developed a race of garden and orchard fruits in this country, vastly superior to those the colonist discovered on his arrival, or those brought from his European home, but which, after all, may be considered but the foundation of the pomology of the future.



VINEYARD NEAR LAKE ONTARIO, CANADA.

The second striking feature of commercial significance has been the rapid development of certain districts on account of their favourable soil and climatic conditions. Assuredly an efficient transportation service has also been an important factor, but such service usually follows the development, of the district, although not infrequently in this country the promoters have been interested in both enterprises. An excellent example of such development is afforded by the great number of Apple trees planted thirty to forty years ago in the counties bordering Lake Ontario in New York State, which have proved eminently suitable both in soil and climate for the cultivation of Apples. Immense quantities of that fruit are grown in this region every year. As an illustration, I may say that in the month of March 1904 it was estimated that fully 3,000,000 barrels of Apples were in the storage-houses of one of these counties awaiting purchasers. Two American varieties, Baldwin and Rhode Island Greening, occupy the major portion of the area planted. There are

something over 100,000 acres of Apple orchards in the five counties touching Lake Ontario in New York State. The lake tempers and modifies the climatic conditions for several miles inland. Peaches yield much more regularly along the shore of the lake than elsewhere. Away from the influence of the lake, the fruit-buds are often killed by the winter. This region is now one of the most famous Apple districts in the United States. It has conditions not unlike those which produce the Gravenstein Apples of Nova Scotia. In recent years the increase in the number of orchards has trended westward, following more or less directly the tide of immigration. The largest orchard enterprises in the world—at least Americans are fond of claiming them as such—are to be found in the hilly regions of Missouri, Arkansas, and Colorado. In these regions fruit-growers plant and care for their trees on the principle of 'a short life and a merry one.' At least the trees are short-lived as compared with



BALDWIN APPLE TREES, MONROE COUNTY, NEW YORK.

Eastern standards. They bear early and heavily, and die comparatively young. In New York State an Apple tree has reached its maximum powers as a producer at the age of forty-five years, but should live, with reasonable care, a hundred years longer. In the Ozarks of Missouri the tree is middle-aged at twenty, and decrepit at thirty; but it commenced bearing early.

However, this is a digression. What I was going to say was that recently a great exploitation of certain regions in the Southern States had occurred. More than three millions of Peach trees were planted in central Georgia last fall, and during the past spring (1904 and 1905). Growers have suddenly, as it were, discovered the adaptability of the Peach to this region. Certain districts in South Carolina have been found where Peaches do surpassingly well. In Texas—that great State 900 miles long by 600 broad—(she is quite out of the Apple zone) blocks

of 1,000 acres or more are being planted with Peaches and Plums. Other features of this important subject are also being studied. For instance, the question is now being asked: In what particular region do you grow your best Spies, Spitzenburgs, Baldwins, Elbertas, and so on? Shrewd buyers learn that certain regions produce Apples of superior flavour, appearance, and qualities for shipping. Growers are studying these variations and following up any suggested improvements. So much for special fruit regions. I have, as you will observe, only touched this important subject in a superficial way.

Another great factor in stimulating fruit growing and widening the opportunities for its increase, is the application of artificial refrigeration to the storage and transportation of fruit. The storage business as an industry has had an extraordinarily rapid growth in the United States, as it has elsewhere. It has enabled the Californian



DWARF DUCHESS, FORTY YEARS OLD. TREES BROUGHT FROM ENGLAND.

to place his Peaches and Citreous fruits on the New York and Boston markets in good condition and to make an occasional entry into Covent Garden. It has allowed the Texas Peach grower to compete on even terms in Chicago and Baltimore with the men from Georgia and Tennessee, all of whom are 1,200 to 2,000 miles from market. It has proved an important check upon the avaricious Apple buyer, because many growers own storage-houses; and it has done much in lessening gluts of perishable fruits during excessively warm weather when they are being gathered. It has aided distribution incalculably, and provided fresh fruit for the wheat-grower of the Canadian North-West as well as the resident of Great Britain.

Cold-storage systems are still imperfect, but they have proved a boon of untold value. These, then, are three of the leading features that have characterised commercial fruit growing in the United States during the

brief period of its existence, for it must be remembered that fifty years ago two or three carloads of Peaches would have had a paralysing effect upon any of our leading markets, whereas on July 25, 1905, Chicago received several trainloads, aggregating 120 cars, which she managed to dispose of with reasonable profit to the consignees and commission men.

Now a few words as to methods of planting and arranging commercial orchards : and allow me to say that my remarks will chiefly have reference to Apple orchards.

First the distance of trees apart.

This varies with the locality : in the Middle Western States 25 to 30 feet for Apples is the usual distance ; in New York State 40 to 50 feet. Quite the best orchard I know of in Western New York State has the trees now standing approximately 60 feet apart each way. They were planted



APPLE ORCHARD, 30 × 30 FEET APART. HALF CUT OUT AT THIRTY YEARS.
WESTERN NEW YORK STATE.

40 × 40 feet. They began to become crowded at forty-five years of age, and they were thinned ten years ago by removing alternate rows diagonally through the orchard. Each tree can now be driven round when spraying and tilling. The sunlight reaches the leaves and fruit better ; and the bearing surface is relatively larger. They bear ten to twenty barrels each every bearing year. Most growers plant only one class of fruit in an orchard. If they plant close, as some do, varieties which come into bearing early are used as temporary trees, while the permanent positions are occupied by the less precocious and longer-lived ones. Many fruit-growers fail to recognise the injurious effects of close planting and consequent crowding upon the health and productivity of the trees.

The following figures, deduced from the examination of several orchards, are conclusive evidence in support of the wider distances.

Average yield for four years :

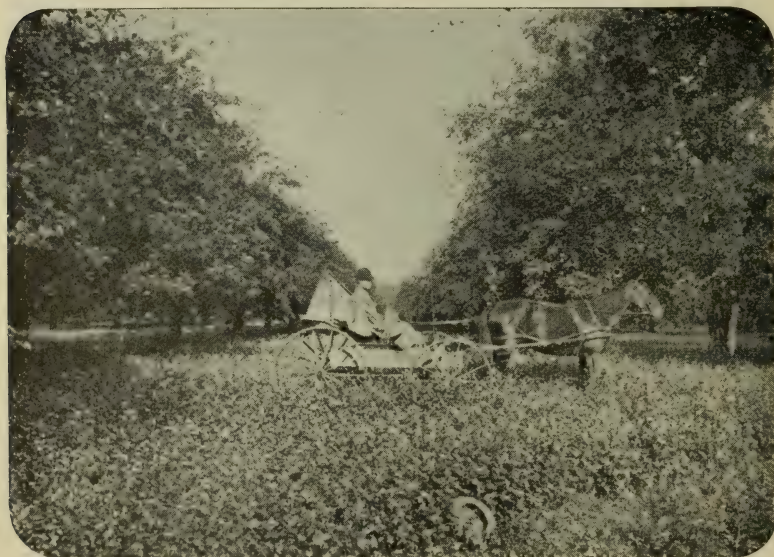
Not over 30 × 30 feet apart	186 bushels per acre.
31 × 31 to 35 × 35 "	222 " "
33 × 36 to 40 × 40 "	229 " "

The following table shows the age at which Apple trees in Western New York State reach the period of their greatest productivity :

Date of Planting	Age	Average yield per acre for four years in bushels
Before 1840	64	171
1840-49	59	173
1850-54	49	181
1855-59	44	257
1860-64	39	218
1865-69	34	200
1870-74	29	191
1875-79	24	202
1880-84	19	115
1885-89	14	66
1890-95	9	54

Second, methods of managing the soil.

There are four leading systems : (1) clean tillage ; (2) tillage with catch or green manuring crops ; (3) grass mulch ; (4) pasturing.



GREEN CROP (BUCKWHEAT) FOR PLOUGHING IN.

The first maintains a clean tillage throughout the summer ; in this way the humus is rapidly burnt up. The second tills the ground early in the season, then sows it with some sort of clover or grain crop with a view of checking the growth of the trees and encouraging the ripening of

the wood. The green cover assists the soil in preventing the penetration of the frost to some extent and furnishes humus and potential plant-food when ploughed in, as it should be the following spring. The third method maintains a grass cover on the orchard soil all the time. When the grass is cut the crop is allowed to remain for the enrichment of the ground. The fourth method, pasturing, is in vogue among orchard-owners who are also "stock men." Sheep and hogs are the best kinds of stock to keep in mature orchards. Cattle and horses cause much injury to the trees. We might make a fifth class of the systematically neglected orchards—those where hay is made and where weeds compete for food and moisture with the trees.

The following table gives the average results of the yield of the Apple crop grown under the different methods described, and is the result of the examination of many hundreds of Apple orchards in New York State.

Five-year Average, Yield per Acre.

	Bushels	Income per acre
Tilled ten years or more	327	\$182
Tilled five years or more	326	145
Tilled over half of preceding five years	231	118
Sod over half of preceding five years	243	122
Sod five years or more	204	108
Sod ten years or more	171	87

Three-year Average, Yield per Acre.

Pastured with hogs	312 bushels
Pastured with sheep	308 "
Pastured with cattle	153 "
Not pastured	217 "

Although the land in these orchards is comparatively new, at least new when judged by Old World standards, it clearly shows the need of regular manuring. Stable and green manures are used more frequently than the commercial forms of fertilisers. (The foregoing tables &c., of course, refer to the orchards in bearing.) During the growing or formative period secondary crops are grown and taken off, but the ground is rarely or never worked so highly as is customary in Great Britain or on the Continent.

Pruning.—Our fruit-growers are sadly careless both as to the requirements of the tree in this matter, and as regards the manner of performing the operation. There is no fixed system in pruning Apple trees. Each grower pursues his own ideal, if he is fortunate enough to possess one, which is the exception. More often he allows his trees to grow till the tops become a mass of brush, and then he attacks the task armed with saw and axe and gives the trees, as he calls it "a good trimming." This results primarily in an important contribution to his pile of wood, and secondarily in a vigorous crop of "water sprouts" in the succeeding season. Many, however, are practising the better method of pruning annually and moderately. Dwarf Pears in the commercial orchards are headed back each winter. Peaches are treated in the same manner till they come into

bearing, after which judicious thinning of the top accompanies a mild heading back. When Peach trees grow old, and carry long straggling branches, having a minimum of bearing wood, it is now a common practice to "head in" the large branches to within a couple of feet of the main stem, and thus induce the development of a new crop of young wood. This means the loss of fruit for a year or two, which is more than made up by the invigorated condition of the whole tree. Great injury is wrought to many of our Apple trees by bad pruning—I mean the leaving of a long stub when a branch is removed. These stubs of course rot and carry decay into the heart of the tree, causing splitting and general disaster. But many of our farmers have neither experience nor gardening instincts.



TRIMMING, NOT PRUNING.

Spraying.—Perhaps no horticultural innovation has become an established custom so quickly as this has. The use of Paris green in anything like a general way is practically contemporaneous with the arrival of the potato beetle—about twenty-five years ago. The application of sprays to fruit trees soon followed. The idea of using fungicides, alone or combined with an insecticide, was developed soon after "Bordeaux mixture" was found useful in controlling grape disease by the French vine-growers. Although scarcely fifteen years have elapsed since its general introduction, millions of dollars of capital are now invested in the manufacture of mechanical devices for the efficient and economical distribution of insecticides and fungicides, in orchards and vineyards in the United States and Canada. There are three general types of machines now in use: (1) those worked by hand; (2) those in which power is derived from revolutions of the wheels of the carriage upon which it is mounted; (3) those worked by engines or carbonic-acid gas, or compressed air. In all the large orchards the power machines (3)

are employed. Machines in class 2 are favourites in vineyards and for spraying nursery stock or field crops. The hand-pump is used on small



SPRAYING VINES FOR THE LEAF-HOPPER.

estates or in hilly situations where the transportation of heavy machinery is difficult or perhaps impossible.



SPRAYING BY STEAM, WESTERN NEW YORK STATE.

As to sprays, the two leading ones are Bordeaux mixture and the sulphur wash. The latter is made by boiling together lime and sulphur

and adding a more or less definite quantity of salt. This is a Californian specific for scale insects. It can only be applied during the dormant season. Its efficiency is greatly weakened by showery weather, consequently it is more satisfactory on the Southern Pacific coast than in the more humid regions of the Atlantic.

Bordeaux mixture is the general fungicide used by fruit-growers. It is popular because copper sulphate and lime are cheap common substances, and because arsenical poisons may be applied with it advantageously. Its efficiency depends largely upon the care exercised by the fruit-grower in preparing and applying the spray mixture. Practical experience and experiment both demonstrate this most conclusively. The following table compiled from the experience of various Apple growers gives some interesting information as to the value of spraying :

Yield and Income per Acre, 1904. Orchards otherwise well cared for.

—	No. orchards	No. acres	Av'ge yields	Per cent. of crop barreled	Av'ge income
Unsprayed . . .	43	381	328	66	\$103
Sprayed once . . .	33	352	346	74	139
Sprayed twice . . .	70	701	374	78	143
Sprayed three times . . .	27	247½	414	87	184
Sprayed four times . . .	6	43	569	77	211

Thinning Fruit.—With Apples this is not practised at all except in the case of early varieties, and with these to but a slight extent. Peaches are regularly thinned by the best growers, leaving the fruit from four to six inches apart; Plums are occasionally, Grapes rarely, and Cherries never thinned. The value of thinning is so clearly demonstrated in the case of the Peach that growers readily adopt the practice. The difficulty and expense of securing intelligent labour for work of this kind in the United States militate strongly against its establishment as a regular practice. Our fruit-growers rarely have the opportunity of witnessing the striking results obtained from the more laborious methods that are practised in Europe, out of doors as well as under glass.

For the same reason that thinning is practised only to a limited extent, dwarf fruit trees are, with the exception of the Pear, hardly ever found outside the private garden of the amateur. Large orchards of Pears on Quince stock are common throughout New York and New England States.

Handling the Fruit.—Let me speak first of Apples—the great staple fruit of the North-Eastern States. Summer Apples are gathered in two or three pickings, placed in baskets, bushel boxes, or barrels, and forwarded to market in refrigerator cars if more than 100 miles distant. Winter varieties are picked and usually graded in the orchard, packed in barrels and immediately sent to the storage-house, where, if kept till midwinter or longer, they are re-graded before shipping. For Apples there are two kinds of storage-houses. The temperature of one is regulated by a carefully-managed system of ventilation; that of the other depends upon a cooling agent to furnish the desired low temperature. Experiments have shown

that mature Apples keep best if placed in storage immediately after being picked. There should not be the intermediate stage of "sweating" or ripening, which is so frequently advocated. In fact, the longer an apple is subjected to this process the shorter is its life. Large quantities of the poorer grades of Apples are "evaporated." One county in New York State furnishes more than half of the "evaporated" Apple stock in the United States. Great quantities of "chops," cores, trimmings, and apple-peelings are dried and find a ready market in Germany. It is not unlikely that we receive back a portion of these later, when the by-product has been transformed into attractive jellies or other form of preserve. Remarkably little cider is made in the United States. The manufacture of vinegar has taken its place. The cheap production of lager beer seems to have



SHIPPING GRAPES IN REFRIGERATOR CARS.

destroyed the market for cider ; or perhaps we do not know how to make an attractive beverage from the Apple.

Speaking frankly on the matter of packing, we are obliged to admit that our wholesale methods of handling large fruit crops have not been conducive to the evolution of the best and most satisfactory types of grading. Too often the packed product is uneven in quality, through carelessness, and occasionally—perhaps oftener—the little Apples have gravitated to the centre of the package and the big ones have found their way to the top. The Dominion of Canada has acted wisely in passing an Act providing for the inspection of the grading of Apples. In this democratic land such a law suggests tampering with individual and inherent rights too much to find favour with the rank and file of our husbandmen.

In dealing with Peaches great skill and judgment are required to enable the grower to pick his fruit at the proper stage of ripeness to allow it to be carried to distant markets. It should be picked when well coloured but still firm along the suture, graded in the packing-house, and then packed in small "veneer" trays, eight of which are placed in an oblong crate. These crates only weigh about forty pounds when full and so can be easily handled. The crates are immediately packed in refrigerated cars, and sent to market in "refrigerated fruit trains." With proper icing good Peaches will stand five or six days' journey by rail and keep good for several days in the fruit stalls after arriving at their destination.

In the disposal of his fruit the grower has his share of grievances. The buyers are better organised. They may have combinations which tend to depress the selling price; the grower is largely at the mercy of



FANCY PEARS PACKED FOR THE BRITISH MARKET.

the commission man, whether he sells in this country or abroad. However, in case of suspected fraud in this country, he can reach his man more easily than if the purchaser is in foreign lands. Some of the most successful examples of selling are those where the co-operative spirit has shown itself. Where the co-operative or the pooling method of selling prevails, the essential of success is that the fruit from the various growers shall be brought to a central packing-house and there graded under the eye of one man, so that the entire output shall be uniform. Co-operative selling conducted after this fashion, accompanied by good business methods, has brought both credit and profit to the promoters.

The farmers are organising their forces more and more each year. Business methods are being introduced, and the outlook for the future is altogether more promising than it has been hitherto.

The photographs illustrating this paper were taken by Professor Craig

THE PROGRESS OF FRUIT CULTURE IN THE UNITED STATES.

A paper read before the Royal Horticultural Society on August 15, 1905. By HERBERT J. WEBBER, Physiologist, in Charge of Plant Breeding Laboratory, Bureau of Plant Industry, Department of Agriculture, U.S.A.

FEATURES OF AMERICAN FRUIT CULTURE.

AMERICAN fruit culture had its beginning in the introduction of fruit from Europe, the early settlers importing those fruits with which they were familiar in their old homes, from various parts of Europe. During the several centuries through which their cultivation has been extended, these imported fruits have gradually given way to varieties bred in America which are better suited to American conditions. While originally all of our varieties of Apples were of European origin, as early as 1817 it was estimated that over 60 per cent. of the Apples recommended for cultivation here were of American origin: that is, American-grown seedlings from the original stock. At the present time a far larger percentage than the above of our varieties are American productions. Bailey estimated that in 1895 fully 90 per cent. of the Apples most popular in the Atlantic States were raised in America. The same increase of American varieties has taken place also in the case of Pears and other fruits. As early as 1853, Hovey wrote: "It is certainly somewhat remarkable, as well as surprising, that in the course of twenty-four years a larger number of really fine Pears have been brought to notice, of American origin, than have been introduced from Europe in the same time, or, we think we may safely add, in the last fifty years." In all other fruits this gradual supplanting of introduced European varieties by American-bred ones has been taking place. As the settlers spread west from the seaboard into the interior, the varieties grown in eastern localities that proved successful were taken with them, and then again a similar change became necessary. It was found that the Apples best adapted for cultivation in the Eastern States were not fully adapted for cultivation in the central prairie regions of the West. Here again the gradual displacement of introduced varieties by home-produced ones has been taking place ever since the beginning of fruit culture.

An interesting feature which has been clearly brought out in connection with the importation and trial of new varieties, is the fact that the great eastern region of the United States—that portion lying east of the Rocky Mountains—is more like Eastern Asia than Western Europe in its requirements, resembling the former region in rainfall, temperature, and seasonal conditions. Accordingly the varieties of fruit which have been imported from Eastern Asia are found to be better adapted to the conditions of growth in this eastern part of the United States than those from Western Europe. On the other hand, the section of the United States lying west of the Rocky Mountains, generally known

as the Pacific Coast Region, has been found to more nearly resemble Western Europe in its adaptability for fruit culture. The country is thus divided into two great natural regions.

Until recently our fruit culture could hardly be considered to have developed to a commercial extent. Orchards of various fruits were grown principally in small areas simply as adjuncts to the general farm industries; and fruit culture, as such, was not carried on as a primary interest, fruit being grown simply to supply home consumption and for sale to a limited extent in local markets. While fruits were very generally cultivated, their use was comparatively limited, due to the fact that no satisfactory means of transit had been found. The introduction of railroads gave a great impetus to the cultivation of fruit. Fruit could now be carried to a much greater distance. Commercial fruit-growing in America, however, may be said to have had its beginning with the introduction of cold-storage methods about 1880. Shortly afterwards the use of refrigerator cars in fruit shipments was introduced, and this led to a further extension of our orchard interests. At the present time probably the most characteristic feature of American horticulture is the vast orchards which have been planted in many parts of the country, and the immense wholesale business which has been developed. Another special feature deserving to be mentioned is the enormous extension of our specialised nursery business which will be mentioned below.

THE USE OF ARTIFICIAL REFRIGERATION.

As already indicated, probably no one feature has been so important in leading to the extension of the American fruit industries as the introduction of artificial refrigeration. Before the introduction of this means of refrigeration, the fruit-grower was necessarily confined to local markets in the sale of his produce, and under these conditions it was impossible to dispose of very large quantities of fruit, owing to the limited season, and the fruit could only be kept for a very short period. As a result, gluts often occurred in markets, and large quantities of fruit were lost. Efforts were made to minimise the loss from this source by canning, and quantities of fruit were preserved in this manner. However, conditions were not satisfactory for a great extension of the fruit-growing industries, and the difficulty of keeping fruit made the market very unstable.

The application of artificial refrigeration in the preservation of fruit has occurred more recently than we are at first inclined to recognise. It appears at first to have been used mainly in the preservation of meats, &c. The first application of refrigeration to fruit-storage, according to Mr. W. A. Taylor, Assistant Pomologist of the Department of Agriculture, took place about 1878. In that year the Pictet Artificial Ice Company fitted up a building in New York City for the purpose of keeping fruits &c. in cold storage for the public. In 1881, according to the same authority, the Mechanical Refrigerating Company, of Boston, opened a storehouse, and was probably the first to utilise artificial refrigeration for storage on a large scale; and in 1888 the Western Cold Storage Company, of Chicago, opened a storage chilled with ice placed in suitable bins. The

first establishment in the west to offer artificial refrigeration for general storage purposes appears to have been the American Union Cold Storage Warehouse Company, of Chicago, which began business on Thanksgiving Day, 1889. This company stored Apples in large quantities in 1890, and Pears a year later. Since this time Apples have been extensively stored in various cities, and the period through which the fruit could be kept has been greatly extended.

The introduction of the use of refrigeration in transit was of still greater importance. To-day the very extensive fruit-growing industry in many parts of the United States remote from centres of population depends entirely upon facilities for refrigeration during transit. Formerly the great bulk of our railroad shipments was sent in cars poorly suited for the purpose, and the fruit deteriorated rapidly. Therefore shipments were only made to places at comparatively short distances. Ventilated cars of various kinds were tried, and were, of course, improvements over the ordinary freight cars. Refrigerator cars were first used in the shipment of meat, which gave a great stimulus to the development of the refrigeration system. In 1868 D. W. Davis perfected and patented a refrigerator-car in which galvanised iron tanks containing a freezing mixture of ice and salt were arranged along the side of the car in such a way that they could be refilled from the top without entering the car. In this style of car, Strawberries were reported to have been successfully shipped from Cobden, Illinois, to Buffalo, New York, and Peaches from Dayton, Ohio, to New York City in sound condition, though in each case the produce was said to have been ten days in transit. From this time the use of refrigerator-cars was gradually extended. According to Mr. W. A. Taylor, however, results were still quite uncertain and the outlook discouraging until about 1887, when F. A. Thomas, of Chicago, and Mr. Parker Earl, of Cobden, Illinois, took the matter up and practically revolutionised the business of fresh fruit transportation. Their plan was to provide a through service from shipping point to destination in special cars under one management, re-icing the cars in transit. A few trials demonstrated that the system was feasible, and the service became very popular. Fruit forwarded to large cities by the carload could by this system then be distributed to other places in small quantities by express, and would reach their destinations in very remote parts of the country in sound condition. The rapid development of shipments of this kind is shown from the fact that, from a total of sixty cars in use in 1888, the company Mr. Thomas organised so increased its accommodation that by 1891 it had in use over 600 cars, travelling over different roads, and used for carrying various fruits at all seasons of the year. Thus the introduction of the refrigerator-car service, and cold-storage plant had the effect of transforming the American fruit industry, for with these improvements it became possible to grow each kind of fruit where it could be raised to the best advantage, and place it on the market in the remotest corner of the country. Furthermore, it stimulated the growing of fruit over large areas and by companies, as it became necessary to ship fruit by the carload, this quantity being the unit of shipment. It can be readily seen that a grower should then have enough trees of a certain variety of fruit so that a carload could be obtained at one picking.

The Peach orchards in Georgia form an interesting illustration of the great extension of the commercial culture of fruit as a result of the refrigerator-car service. It is rare in Georgia to find an orchard containing less than 10,000 trees. The conditions of cultivation have given rise to enormous orchards, such as the Hale Orchard Company, of Fort Valley, Georgia, which contains 365,000 Peach trees, and from which 212 carloads of fruit were shipped in one season. There are a number of large orchards in Georgia, and others may be found in various States, as for instance the Alleghany Orchard Company, of West Virginia, which has 170,000 Peach trees, or the Olden Fruit Company, of Missouri, who have three square miles under cultivation, and the Stanford Vineyard of California, containing nearly three thousand acres of European vines. Orchards of three hundred acres in extent are not uncommon. It must be understood, however, that the greater part of the fruit is grown in orchards of less than three hundred acres; and in the majority of districts fruit farms of from ten, to one hundred acres are more common. Only a few years ago most of the Oranges and Lemons used in the eastern part of the United States were produced in foreign countries. Now, as a result of the use of refrigeration cars, almost the entire Orange crop used in American cities is grown in Florida and California, and shipped in refrigerator-cars. The Orange industry, however, has developed in a rather different way from the Peach and Apple industries. Both in California and Florida the greater part of this fruit is produced in comparatively small orchards or groves. It is sold on the spot and shipped by companies. There are, of course, some instances of very extensive orange groves being under a single management and where the shipments are made by the grower.

One of the most striking results of the refrigerating system is that markets can be supplied with 'soft fruits' grown at a distance for a much longer period than heretofore; for instance, the Strawberries used in the cities of New York, Philadelphia, and Chicago during the winter and early spring months are grown in the warm regions of Florida and the south. By the time the Strawberry crop in Florida is over, shipments are being made from South Carolina and other places just north of Florida. When the crop in these parts is finished, those again further north become available and are brought to market. This is taken advantage of to a marked degree in the case of Peaches, Melons, Cantaloupes, Tomatos, and other fruits and vegetables, so that at almost all seasons of the year such fresh fruits and vegetables grown in the open air are to be found in our markets. In this way fruit can be produced and placed on the market much cheaper than it can be grown in hothouses, and the result has been a great extension in the use of fruit. The enormous network of railways, equal to, if not greater than, that of all other countries combined, greatly facilitates the distribution of fruit and garden produce. In no other country, so far as the writer can learn, are fruit and vegetables grown and handled so extensively as in the United States.

THE CRYSTALLISATION OF FRUITS AND FLOWERS.

Lecture by C. HERMAN SENN.

Delivered at the Royal Horticultural Society on Tuesday, December 5, 1905.

THE business of preserving various kinds of fruit whole in sugar, including candied, crystallised, and glacé or glazed fruits, forms an important industry which is chiefly carried on in the south of France, where there are a large number of firms doing a most profitable business.

The French *confiseurs* seem to have a special gift and aptitude for this particular trade. They possess both great taste and skill in the selection of fruit, its preservation, arrangement, and colour, as well as in packing these goods. It is entirely owing to this that they have gained, and retain, almost a monopoly in supplying the world with this class of goods.

The way in which the French preserve and crystallise fruit renders its appearance most attractive, and that is one of the reasons why it always commands a good market.

In addition to crystallised fruits, a large quantity is also preserved in syrup, in tins and bottles, as well as in the plainer form known as glacé.

Crystallised and glacé fruits are neatly packed in boxes of wood or cardboard. With regard to this I should like to call attention to the fact that not only does the French manufacturer pay strict attention to the preparation of the articles, which are invariably as perfect as it is possible to make them; but he likewise studies the best methods of putting them on the market. The "get-up" of packages in the Frenchman's hands becomes, as it were, an art. He studies not only elegance of form, but a correct, smart, and pleasing contrast of colours. His ingenuity and inventive power are ever on the alert, whilst each year he produces some kind of novelty in packing the fruit more tastefully and artistically than before. Competition and rivalry, in this class of goods especially, are very keen among the French manufacturers.

Fruit and flower crystallisation is, as far as I know, entirely a French invention. German, Belgian and Italian manufacturing confectioners are also ingenious, and they, too, preserve fruit in this way, but their goods do not, as a general rule, come quite up to the standard of excellence of the French article.

The crystallisation of fruit and flowers is effected by encrusting them with a thin coating of sugar, or, in other words, by a deposit of sugar crystals. This is brought about in the case of fruits by their being first boiled in a syrup, allowed to soak in it at certain degrees of heat, and then drained and dried for crystallising purposes. The process takes several days. I should have liked to have shown to you by way of some practical demonstration the process of crystallising, but as this is not possible in the time allowed for a lecture, I will explain the various stages of preserving and crystallising fruits. This, together with the specimens of

partially prepared and finished articles, will, I hope, give you some idea how fruit ought to be treated for glacé and crystallising purposes.

The process of candying or crystallising fruits and flowers is not unlike that of making sugar candy, which is produced by pouring a rather highly concentrated syrup, or solution of sugar, into a large wooden pail, which is fitted up with trays provided with horizontally stretched cotton threads or very thin string. By allowing the syrup to stand undisturbed and covered in this condition for some hours, the strings and sides of the pail or tub will be covered with large crystals, which are sold in this state as sugar candy. The same occurs with fruits, bonbons, or flowers which are to be crystallised, the only difference being that the crystals formed on these goods must be very much smaller and finer: indeed, the formation of large crystals must be avoided as much as possible in these cases; the best crystals are those when the sugar is deposited in minute crystals which sparkle like diamonds.

As it is hardly possible to crystallise fruit before it is preserved, I will make some remarks on this subject of preserving.

The fruit must be firm but not over-ripe, the utensils must be perfectly clean, and the sugar of best quality.

As to the selection of fruit, too much attention cannot be paid to this point, because different degrees of ripeness bring about variation in results. Much of the success in preserving fruit depends on the *blanching* process, which should be continued till the fruit is three parts cooked. By shortening this boiling, the fruit invariably becomes tough and shrivels up in the syrup.

Fruit, when properly ripened, should be preserved without altering its shape, and should retain its natural size afterwards. The kinds best adapted for crystallising are Pears, Apricots, Greengages, Mirabelles, Chinois, Cherries, Pineapples, and Angelica (which, of course, is not a fruit). Many other kinds of fruit are suitable, but are not so popular as the above.

The syrup is the all-important factor in preserving as well as in crystallising fruits, and unless it be properly prepared and used no satisfactory result can be hoped for. To make a syrup for crystallising take 14 lbs. cane sugar (Tate's No. 1 loaf sugar), put it in a large copper pan with 2 quarts of water, 10 drops of acetic acid, and 1 gill of rectified spirit of wine. Place the pan on the fire, and allow the sugar to dissolve before the mixture boils. During the process of boiling, carefully remove all the scum which rises to the surface by means of a skimmer, and see that the edge and side of the pan are kept perfectly clean. This is best done by the help of a brush dipped in water. Having thus clarified the sugar, boil it to the required thickness to form a syrup.

To test the syrup put in the saccharometer, or what is known as "pèse-sirop" in France. This instrument will enable you to ascertain the exact degree or stage of cooking. It is also called a syrup gauge; it registers the heat of the sugar from 5–40° of Centig., and the saccharometer registers from 10–400° Fahr.

Anyone accustomed to boiling sugar can judge the point which the cooking has reached by merely touching it with the fingers, but to those who have not attained this proficiency the use of a saccharometer is

strongly recommended. In cases where a large quantity of syrup is cooked, such as is needed for fruit preserving, the saccharometer or the syrup gauge is indispensable, as so much depends upon maintaining uniformity of the thickness or thinness of the syrup, as the case may be.

The syrup used for crystallising fruits must cook until the instrument ("pèse-sirop" or saccharometer) registers 40° Centig. or 97° Fahr. I have here two of these instruments, one a "pèse-sirop" which registers by the Centigrade scale, and the other, a saccharometer, registering by the Fahrenheit scale. The former is almost exclusively used in France.

Having ascertained that the temperature of the syrup is correct, move the pan from the fire to the side of the stove; take a piece of paper and run it over the surface of the syrup so as to remove any particle of impurity. The syrup must be kept warm, but the pan must on no account be



SACCHAROMETER USED IN SUGAR BOILING.

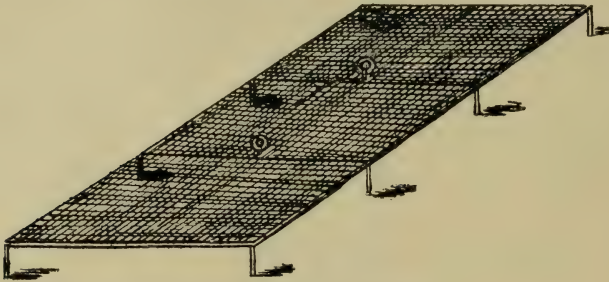
touched or shaken, because if the syrup is in the least disturbed at this stage it may become quite useless for the purpose for which it is intended.

The same remarks apply to the actual cooking process: if the pan be shaken in the least degree the syrup will be rendered unfit for use, for it will become "mossy." This word "mossy" is a technical term, and implies that sugar so cooked will turn white and grainy and will fail to produce crystals, whereby not only the sugar, if used, but also the fruit would become spoilt.

The apparatus now required consists of two or more square or oblong tins, three inches high, with slightly slanting edges and a $\frac{3}{4}$ -inch tube attached, with a cork in one corner of each tin; also two or more wire trays of fine mesh, which will fit exactly into the syrup tins; also four corks for each tin, to raise the wire trays, are required for the process of

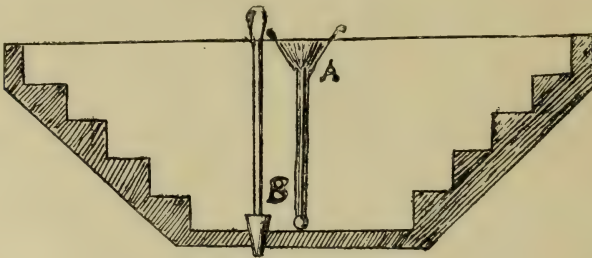
crystallising. For business purposes, specially constructed crystallising tins, such as I submit herewith by a sketch, are recommended.

The syrup, after having been correctly prepared, must be allowed to stand uncovered for about two hours. A thin crust will by that time have formed on its surface. This must be carefully removed, so as not to disturb the syrup. Having arranged the fruit neatly in the tin and trays, and placed the trays in a slightly slanting position, pour the syrup over so that it will just, but thoroughly, cover the fruit. The wire trays must be



A WIRE TRAY FOR DRAINING.

raised in the tins, this being done, as already explained, by means of a cork placed in each corner. In this condition, allow the fruit to stand in a warm place from fourteen to twenty hours, by which time the crystallising process will have taken place. The syrup is then strained off by removal of the cork in the tin tube before referred to, after which the trays containing the fruit are lifted out and placed in a warming or drying closet with a temperature of 70° Fahr. for about four hours; after this the crystallisation will be completed.



HAUSNER'S IMPROVED CRYSTALLISING VESSEL.

A, Funnel for pouring in syrup; B, Stopper to draw out for draining purposes.

For Melons, Pineapples, and certain kinds of Pears, it is necessary to use syrup cooked to a slightly higher degree than that used for other fruit, the former being less absorbent. Certain fruits, such as Strawberries, Raspberries, &c., are more difficult to crystallise than others. They must not be laid in the wire trays, but must be hung up in a horizontal position and so immersed in the syrup till the crystallising deposit be formed.

The drying process in crystallising fruit is by no means difficult where proper drying cupboards, cabinets, or drying rooms exist. It requires to

be slowly done, but in cases of emergency the drying process of fruit is hastened by being dredged with very fine caster sugar.

Carnations, Orange blossoms, Rose leaves, and Violets, as well as other flowers, can be crystallised. The process, however, is not so simple as that for fruit. It differs as far as the preparation prior to crystallising is concerned, and needs a considerable amount of practice before uniformity in results can be obtained.

To crystallise Violets.—Break off the heads of a quantity of perfectly dry double blossoms; immerse them for a short time in a strong solution of water and gum arabic. Then dry them carefully. Next, place them in a crystallising tin tray, and pour over a syrup at a temperature of 100° Fahr. and proceed in the same manner as explained for the crystallisation of fruit.

Another and perhaps more convenient way is to drop the blossoms, after being immersed in the gum solution, into a syrup boiled to what is known as the "small crack," which is about 280° Fahr. by the saccharometer. Allow them to cool on a wire tray, besprinkle with very fine caster sugar, and lay them out to dry on a board in some warm place of similar temperature as used for fruit drying.

I will now give a selection of recipes for preserving a few kinds of fruit, the knowledge of which is essential for anyone wishing to master the glacé, or crystallising processes.

To preserve or glacé Cherries.—Take 12 lbs. Bigarreau Cherries, 8 lbs. best preserving sugar. (Kentish Cherries are also suitable for preserving in this way.) Remove the stalks from the Cherries and stone them carefully, put them in a copper preserving pan with three to four pints of water and 3½ lbs. of sugar. Bring slowly to the boil and remove the scum, then simmer gently till the Cherries are nearly cooked.

Pour the whole into an earthenware or wooden pan, and let it remain till the following day—say for about twenty-four hours. The next day drain the Cherries and boil up the syrup, adding to it another 2 lbs. of sugar. Skim, and put back the Cherries. Allow them to boil gently for a few minutes and pour into a basin, allowing them to stand for another twelve to eighteen hours or longer. The following day repeat this operation, boiling the syrup with the remainder of the sugar rather longer, until the syrup forms thin strings on a spoon as it is dipped in it, that is at a temperature of 101° Centig. by the pèse-sirop, or 215° Fahr. by the saccharometer, if either of these instruments be used. Now add the Cherries and boil up for a third time. Remove the pan from the fire, and allow its contents to cool. Lastly, pour off the syrup, and place the Cherries to drain on wire trays. Put the trays in a warm closet or drying chamber for a few hours. Pack the fruit when quite cold.

To preserve or glacé Greengages.—This kind of fruit requires more cooking than Cherries. They, and the syrup, must be boiled no less than eight different times. Prick the Greengages, which must be scarcely ripe, with a needle, and put them in a preserving pan with enough water to cover the fruit well; add to it ½ oz. of Vichy salt (this is used to preserve the green colour of the fruit) to each gallon of water used. Boil the Greengages till they float on the surface of the water, take them out with the help of a skimmer, and put them into cold water just long

enough to cool the fruit. Drain off the water and re-heat the plums in the same liquor in the preserving pan. They must *not*, however, be allowed to boil the second time. Now drain the fruit on a wire tray or large sieve; pick out any that may be too soft. Put the Greengages in a pan or basin, and pour over enough boiling syrup at a temperature of 30° Centig. or 85° Fahr. Cover the pan and let it remain till the following day, when the syrup is boiled, skimmed, and poured over the fruit again. Repeat the latter process five times, allowing ten to twelve hours to elapse between. Lastly, boil the syrup until it reaches 95° Fahr. (registered by the saccharometer), put in the Greengages, reboil, and let cool in the syrup, then drain, and dry as before explained. Apricots and Pears are treated in the same manner as Greengages.

To glacé Chestnuts.—Remove the shells of some Italian Chestnuts, choosing those of even size. Mix an ounce of flour with two to three quarts of water in a stewpan, put the Chestnuts in this and boil, then let them simmer till they are tender. Drain the Chestnuts and peel them carefully, so as not to break them. Cool them in a basin of water, and then drain on a sieve or wire tray. After being drained, put them in a large pan, and pour over them enough very hot syrup (25° Centig. or 78° Fahr.) to cover the Chestnuts thoroughly. Let them remain covered in this syrup for two or three days, then pour off the syrup and reduce it slightly, adding to it 2 lbs. to 3 lbs. more sugar, according to the quantity of Chestnuts on hand. Pour this over the Chestnuts, and let them again soak for another two days or longer. Then, after being drained, reboil the Chestnuts in a syrup registering 35° Centig. or 95° Fahr. Let them boil for a few minutes only, then take them off the fire and put them away to cool. When required for serving, drain them carefully, and dip each into a syrup, cooked to "firm crack," 125° Centig. or 285° Fahr. Vanilla flavouring is often introduced with preserved Chestnuts. For this purpose use one or more sticks or pods of vanilla, according to the quantity of syrup, and cook it with the first lot of syrup and allow it to remain for a day or two in it.

[This Form can be easily detached for use.]

THE ROYAL HORTICULTURAL SOCIETY.

Established
A.D. 1804.Incorporated
A.D. 1809.

VINCENT SQUARE, WESTMINSTER, S.W.

Telegrams: "HORTENSIA, LONDON." Telephone No.: 5363, Westminster.

Form of Recommendation for a FELLOW of the
ROYAL HORTICULTURAL SOCIETY.

Name

Description

Address

being desirous of becoming a FELLOW of the ROYAL HORTICULTURAL SOCIETY, we whose Names are underwritten beg leave to recommend him (her) to that honour; he (she) is desirous of subscribing *
Guineas a year.

Proposed by

Seconded by

* Kindly enter here the word *four* or *two* or *one*.

It would be a convenience if the Candidate's Card were sent at the same time.

Signed on behalf of the Council, this day of 190

..... CHAIRMAN.

[P.T.O.]

THE ROYAL HORTICULTURAL SOCIETY.

Privileges of Fellows.

- 1.—Anyone interested in Horticulture is eligible for election, and is invited to become a Fellow.
- 2.—Candidates for election are proposed by two Fellows of the Society.
- 3.—Ladies are eligible for election as Fellows of the Society.
- 4.—The Society being incorporated by Royal Charter, the Fellows incur no personal liability whatsoever beyond the payment of their annual subscriptions.
- 5.—Forms for proposing new Fellows may be obtained from the Offices of the Society, Vincent Square, Westminster, S.W.
- 6.—If desired, the Secretary will, on receipt of a letter from a Fellow of the Society suggesting the name and address of any lady or gentleman likely to become Fellows, write and invite them to join the Society.

FELLOWS.

A Fellow subscribing Four Guineas a year (or commuting for Forty Guineas) is entitled—

- 1.—To ONE Non-transferable (personal) Pass and FIVE Transferable Tickets admitting to all the Society's Exhibitions, and to the Gardens.
N.B.—Each Transferable Ticket or Non-transferable personal Pass will admit three persons to the Gardens at Wisley on any day *except* days on which an Exhibition or Meeting is being held, when each Ticket or Pass will admit One Person only. The Gardens are closed on Sundays, Good Friday, and Christmas Day.
- 2.—To attend and vote at all Meetings of the Society.
- 3.—To the use of the Libraries at the Society's Rooms.
- 4.—To a copy of the Society's JOURNAL, containing the Papers read at all Meetings and Conferences, Reports of trials made at the Gardens, and descriptions and illustrations of new or rare plants, &c.
- 5.—To purchase, at reduced rates, such fruit, vegetables, and cut flowers as are not required for experimental purposes.
- 6.—To a share (in proportion to the annual subscription) of such surplus or waste plants as may be available for distribution. Fellows residing beyond a radius of 35 miles from London (by the A B C Railway Guide) are entitled to a double share.
- 7.—Subject to certain limitations, to obtain Analysis of Manures, Soils, &c., or advice on such subjects, by letter from the Society's Consulting Chemist, Dr. J. A. Voelcker, M.A., F.I.C.
- 8.—To have their Gardens inspected by the Society's Officer at the following fees:—One day, £3. 3s.; two days, £5. 5s.; *plus* all out-of-pocket expenses.
- 9.—To exhibit at all Shows and Meetings, and to send seeds, plants, &c., for trial at the Society's Gardens.
- 10.—To recommend any ladies or gentlemen for election as Fellows of the Society.

A Fellow subscribing Two Guineas a year (or commuting for Twenty-five Guineas) is entitled—

- 1.—To ONE Non-transferable Pass and Two Transferable Tickets, and to all the other privileges mentioned in Nos. 2 to 10 above.
- 2.—To the same privileges as mentioned in Nos. 2, 3, 4, 5, 6, 7, 8, 9, 10, as above.

A Fellow subscribing One Guinea a year, with an Entrance Fee of £1. 1s. (or commuting for Fifteen Guineas), is entitled—

- 1.—To ONE Transferable Ticket (in lieu of the non-transferable personal Pass), and the privileges mentioned in Nos. 2, 3, 4, 5, 6, 7, 8, 9, 10, as above.
[*Bond fide* Gardeners earning their living thereby, and persons living permanently abroad, are exempt from the payment of the Entrance Fee.]

ASSOCIATES.

An Associate subscribing 10s. 6d. a year is entitled—

- 1.—To ONE Non-transferable Pass, and to privileges as mentioned in Nos. 3, 4, and 9.
N.B.—Associates must be *bond fide* Gardeners, or employés in a Nursery, Private or Market Garden, or Seed Establishment, and must be recommended for election by Two Fellows of the Society.

Local Horticultural and Cottage Garden Societies may be Affiliated to the Royal Horticultural Society, particulars as to which may be had on application.

ESTABLISHED
1804.



INCORPORATED
1809.

ROYAL HORTICULTURAL SOCIETY,

VINCENT SQUARE, WESTMINSTER, S.W.

NOTICES TO FELLOWS.

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| <ol style="list-style-type: none"> 1. Notices to Fellows. 2. Letters. 3. Telephone and Telegrams. 4. Journals Wanted. 5. Subscriptions. 6. Additional Tickets. 7. Form of Bequest. 8. Privileges of Chemical Analysis. 9. List of Fellows. 10. An Appeal. 11. The Society's Garden at Wisley. 12. Distribution of Surplus Plants. 13. The Society's New Home. 14. Programme for 1906. 15. Letting of Hall. 16. Hall Accommodation. 17. Hall Engagements, 1906. 18. The Temple Show. 19. Show of Floral Decorations. 20. Holland House Show. | <ol style="list-style-type: none"> 21. International Conference on Plant Breeding. 22. British Fruit Show. 23. Colonial-grown Fruit Shows. 24. Shows of kindred Societies to which Fellows' Tickets admit without Payment. 25. Lectures. 26. Examinations. 27. Students. 28. Information. 29. Inspection of Fellows' Gardens. 30. Affiliated Societies. 31. Rules for Judging. 32. Varieties of Fruits. 33. Other Publications. 34. Picture Post Cards. 35. Portrait of the President and the Lawrence Medal. 36. Advertisements. |
|---|---|

1. NOTICES TO FELLOWS.

A page or so of Notices to Fellows is always added at the end of each number of the JOURNAL, immediately preceding the Advertisements, and also at the beginning both of the "Book of Arrangements" and of the "Report of the Council." Fellows are particularly requested to consult these Notices, as it would often save them and the Secretary much needless correspondence.

2. LETTERS.

All letters on *all* subjects should be addressed—The Secretary, Royal Horticultural Hall, Vincent Square, Westminster, S.W.

3. TELEPHONE AND TELEGRAMS.

Telephone Number **5363, WESTMINSTER.**

"HORTENSIA, LONDON," is sufficient address for telegrams.

4. JOURNALS WANTED.

The Secretary would be very greatly obliged for any of the following back numbers:—Vol. V., Part 1; Vol. VII., Part 2; Vol. X.; Vol. XIII., Part 1; Vol. XVI., Parts 2 and 3; Vol. XVII., Parts 1 and 2; Vol. XVII., Parts 3 and 4; Vol. XIX., Part 1; Vol. XIX., Part 2; Vol. XX., Part 3; Vol. XXII., Part 3; Vol. XXII., Part 4; Vol. XXV., Part 3; Vol. XXVI., Part 4; Vol. XXVII., Part 1; Vol. XXVII., Part 4; Vol. XXVIII., Parts 3 and 4; and Vol. XXIX., Parts 1, 2, and 3.

5. SUBSCRIPTIONS.

All Subscriptions fall due on January 1 of each year. To avoid the inconvenience of remembering this, Fellows can *compound* by the payment of one lump sum in lieu of all further annual payments, or they can, by applying to the Society, obtain a form of instruction to their bankers to pay for them every January 1. Fellows who have not already given an order on their bankers for the payment of their subscriptions each year are requested to do so, as this method of payment is preferred, and saves the Fellows considerable trouble. Forms for the purpose may be obtained from the R.H.S. Offices at Vincent Square, Westminster, S.W. Fellows whose subscriptions remain unpaid are debarred from all the privileges of the Society; but their subscriptions are nevertheless recoverable at law, the Society being incorporated by Royal Charter.

In paying their subscriptions, Fellows often make the mistake of drawing their cheques for Pounds instead of for Guineas. Kindly note that in all cases it is Guineas and not Pounds. Cheques and Postal Orders should be made payable to "The Royal Horticultural Society" and crossed "London and County Bank, Westminster."

6. ADDITIONAL TICKETS.

Fellows very often say they would like to send tickets to friends, but are afraid to risk the loss of their own Fellows' passes. The Council have therefore consented to issue (to Fellows only) tickets admitting to any of the ordinary Shows at the Royal Horticultural Hall, Vincent Square, during the year 1906. They will be issued in books of ten 2s. 6d. tickets for £1, and any of the ten unused during 1906 can be returned and counted as representing 2s. each in sending the purchase money for a fresh book for 1907, but cannot be accepted at the doors after December 31, 1906, nor accepted in exchange for a new book after 1907. The face of the ticket bears the following inscription:



ROYAL HORTICULTURAL SOCIETY.

Established 1804. Incorporated 1809.

VINCENT SQUARE, WESTMINSTER, S.W.

Available only during 1906.

TICKET of ADMISSION for One Person to any ONE of the Society's ordinary fortnightly Exhibitions and Meetings in the Royal Horticultural Hall, Vincent Square, but not elsewhere.

Doors open at 1 p.m.

W. WILKS,
Secretary R.H.S.

With the Compliments of _____

P.T.O.

This Ticket must be given up at the entrance.

and on the back of the ticket is a map (see p. viii) showing the exact position of the Hall and its main approaches.

Nota bene.—Fellows are not allowed to sell these tickets: they are only issued on that condition, and as a convenience to Fellows wishing to invite their friends; nor can they be exchanged for money.

7. FORM OF BEQUEST.

I give and bequeath to the Treasurer for the time being of the Royal Horticultural Society, London, the sum of £ _____, to be paid out of such part of my personal estate as I can lawfully charge with the payment of such legacy, and to be paid free of legacy duty, within six months of my decease; the receipt of such Treasurer to be a sufficient discharge for the same. And I declare that the said legacy shall be applied towards [the general purposes of the Society].*

8. PRIVILEGES OF CHEMICAL ANALYSIS.

Full instructions are contained at page 10 in the "Book of Arrangements, 1906."

9. LIST OF FELLOWS.

A list of all the Fellows of the Society is sent out in January. Fellows are requested to look at their own names in it, and if in any way these are incorrect, or the addresses insufficient, they are requested to inform the Secretary at once. Another use which all Fellows might make of this list is to consult it with reference to their friends' names, and if any of them are not found recorded therein they might endeavour to enlist their sympathies with the Society, and obtain their consent to propose them as

* Any special directions or conditions which the testator may wish to be attached to the bequest may be substituted for the words in brackets.

Fellows forthwith. Forms of Nomination, and of the Privileges of Fellows, are bound in with every number of the JOURNAL and the "Book of Arrangements," each year (see pp. i, ii above), and just a line addressed to the Secretary, R.H.S., Vincent Square, Westminster, containing the name and address of the proposed new Fellow, will suffice. Should it be preferred, the Secretary will, upon receipt of a postcard or letter giving the names and addresses of any persons likely to join the Society, write direct and invite them to allow their names to be proposed for election.

10. AN APPEAL.

What has been accomplished for the Society since 1887 is largely due to the unwearied assistance afforded by a small proportion of the Fellows ; but as all belong to the same Society, so it behoves each one to do what he or she can to further its interests, especially in helping to provide a properly equipped Horticultural Research Station at the Wisley Garden.

A photographic outfit is also wanted at Wisley, and new or rare plants for the Garden ; books, too, are required to fill the gaps in the Library. Thus there is plenty for all to do according to their individual liking : personal effort in obtaining new Fellows, money, plants, books, are all alike needed.

11. THE SOCIETY'S GARDEN AT WISLEY.

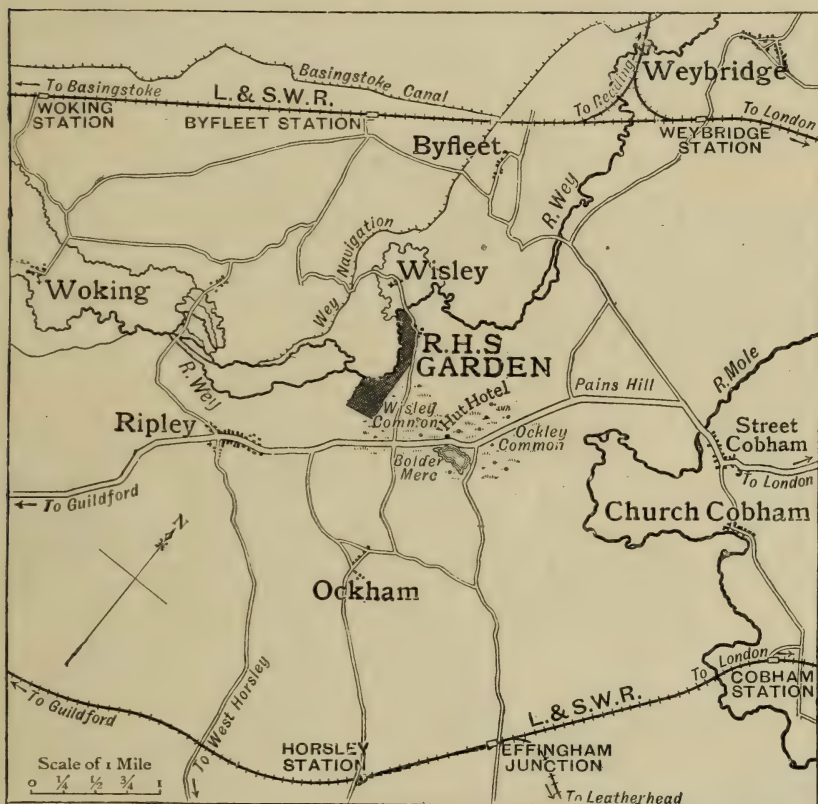
(NOT OPEN ON SUNDAYS.)

The Garden is open daily to Fellows and others showing Fellows' Transferable Tickets from 9 A.M. till sunset, except on Sundays, Good Friday, and Christmas Day. Each Fellow's ticket admits three to the Garden. The public are not admitted. There is much of interest to be seen at Wisley throughout the year. The late Mr. G. F. Wilson's garden included a wild wood-garden, a bank of flowering shrubs, a series of ponds and pools, and a fine collection of Japanese Iris, Primulas, Lilies, Rhododendrons, &c. The Society has added a complete set of the best varieties of hardy fruit trees and bushes, and of Roses and other ornamental trees and flowering shrubs, for the most part kindly given by the leading nurserymen. A very large sum of money has also been spent in the erection of a fine series of glass-houses; of a dwelling-house for the Superintendent; a cottage for the Fruit Foreman; and in establishing a complete system of water supply and drainage works, and in road-making.

The Gardens are situated about 2 miles from Ripley; and about $3\frac{1}{2}$ miles from Horsley and $5\frac{1}{2}$ miles from Weybridge, both stations on the South-Western Railway, with frequent trains from Waterloo and Clapham Junction. Carriages to convey four persons can be obtained by writing to Mr. White, fly proprietor, Ripley, Surrey; the charge being, to and from Weybridge 10s., or to and from Horsley 7s. Excellent accommodation and refreshments can be had at the Hut Hotel, close to the Garden, and also at the Hautboy at Ockham.

12. DISTRIBUTION OF SURPLUS PLANTS.

Fellows are particularly requested to note that a list to choose from of all the plants available for distribution is sent in January *every year* to every Fellow, enclosed in the "Report of the Council." The ballot for order of being served was made on March 1, and the distribution is being proceeded with as quickly as possible. Fellows having omitted to fill up their application form before April 30 must be content to wait till the next distribution. The work of the Gardens cannot be disorganised by



POSITION OF THE SOCIETY'S GARDEN.

the sending out of plants at any later time in the year. All Fellows can participate in the Annual Distribution *following* their election.

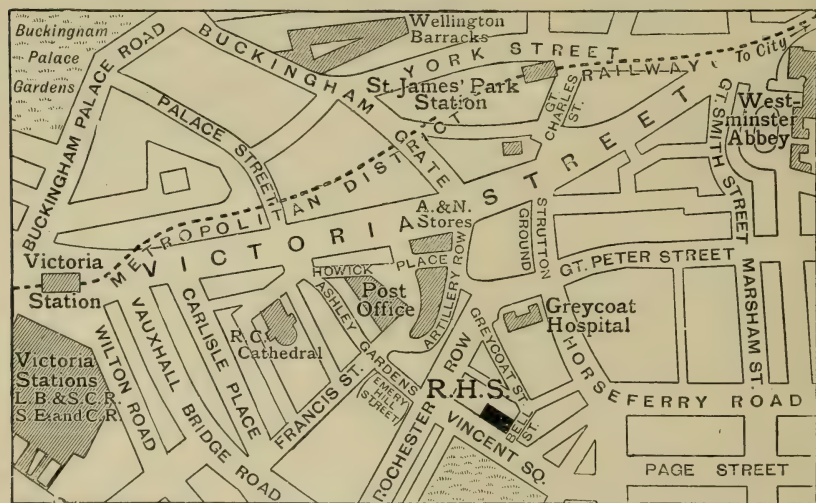
In their Annual Report the Council draw the attention of Fellows to the way in which this annual distribution of surplus plants has arisen. In a large garden there must always be a great deal of surplus stock which must either be given away or go to the waste heap. A few Fellows noticing this, asked for plants which would otherwise be discarded; and they valued what was so obtained. Others hearing of it asked for a share, until the Council felt they must either systematise this haphazard distribution or else put a stop to it altogether. To take the latter step

seemed undesirable. Why should not such Fellows have them as cared to receive such surplus plants? It was therefore decided to keep all plants till the early spring, and then give all Fellows alike the option of claiming a share of them by ballot. The following points should therefore be borne in mind :—(1) It is only surplus plants which are available ; (2) there is no pretence made of their being either valuable or rare, though undoubtedly some are not usually met with ; (3) as a general rule they are only small plants.

Plants cannot be sent to Fellows residing outside the United Kingdom, owing either to length of time in transit or to vexatious regulations in some foreign countries ; but the Council will at any time endeavour to obtain for Fellows living abroad any unusual or rare seeds which they may have been unable to procure in their own country.

13. THE SOCIETY'S NEW HOME.

The Royal Horticultural Hall is now occupied by the Society for its Shows, Meetings, Library, and Offices. Vincent Square lies straight through Ashley Gardens from Victoria Street, Westminster, and is about five minutes' walk from the Victoria and St. James's Park Stations. The accommodation for the Shows is double what it was in the old Drill Hall. The Lectures are delivered in a room specially equipped and devoted to



POSITION OF THE SOCIETY'S HALL.

that purpose, and the Library is now housed in a manner worthy of the unique and valuable collection of books which it contains, and as the shelf accommodation is at least double what it was in Victoria Street the Council hope that all Fellows will send such horticultural and botanical books as they can spare from their own shelves, as well as any articles and papers they may themselves publish on such subjects.

14. PROGRAMME FOR THE YEAR 1906.

- Jan. 9. Exhibition and Meeting.
 „ 11. Examination for Employés in Public Parks and Gardens.
 „ 23. Exhibition and Meeting. Lecture by Mr. Martin H. F. Sutton, on the Formation and Care of Lawns, Golf Links, &c.
- Feb. 13. Exhibition; Show of Winter-flowering Carnations; ANNUAL GENERAL MEETING at 3 p.m.
- Mar. 6. Exhibition and Meeting. Lecture by Mr. G. W. Bulman, on Garden Nomenclature.
 „ 20. Exhibition and Meeting. Lecture by the Rev. Prof. G. Henslow, V.M.H., on Parasites and Saprophytes among Flowering Plants.*
 „ 22.) SHOW OF COLONIAL-GROWN FRUIT AND VEGE-
 „ 23.) TABLES. Lectures on the Horticulture of South Africa,
 „ 24.) by P. J. Hannon and others.
 „ 28. General Examination in Horticulture.
- April 3. Exhibition and Meeting. Lecture by Mrs. Scott, on the Growth of Plants and Opening of Flowers.*
 „ 11. Examination in Cottage Gardening for School Teachers.
 „ 17. NATIONAL AURICULA AND PRIMULA SOCIETY'S SHOW. Special Prizes offered for Daffodils. Meeting and Lecture by Mr. F. Enock, F.L.S., on Colour Photography in Horticulture.*
- May 1. Exhibition and Meeting. Lecture by Mr. Edward Mawley, V.M.H., on Phenology as an aid to Horticulture.*
 „ 15. Exhibition and Meeting. Lecture by Prof. Corbett, of Washington, U.S.A., on Flower Gardens in the United States.
 „ 29.) GREAT FLOWER SHOW, INNER TEMPLE GARDENS.
 „ 30.) *Fellows admitted after 12.30 on May 29, upon showing*
 „ 31.) *their Tickets.*
- June 6.) SHOW OF COLONIAL-GROWN FRUIT AND VEGE-
 „ 7.) TABLES. Lecture on June 6 by Miss Phillips, M.A., on the Horticultural Resources of Victoria, Australia.*
 „ 12. Exhibition and Meeting. Lecture by Sir George Watt, C.I.E., on Tea and the Tea Plant.*
 „ 20. SHOW OF DECORATED TABLES, BOUQUETS, &c.
 „ 26. Exhibition and Meeting. Lecture by the Rev. Prof. G. Henslow, V.M.H., on Remarkable Cases of Adaptation to the Conditions of Life.*
- July 5. NATIONAL SWEET PEA SOCIETY'S SHOW.
 „ 10.) GREAT SUMMER SHOW, AT HOLLAND HOUSE,
 „ 11.) KENSINGTON. *Fellows admitted after 12.30 on July 10*
 „ 11.) *upon showing their Tickets.*
 „ 17. Exhibition and Meeting. Lecture by Mr. Horace J. Wright, on Sweet Peas.
 „ 24. NATIONAL CARNATION AND PICOTEE SOCIETY'S SHOW.

* Lecture illustrated by Lantern Slides.

- July 30. } INTERNATIONAL CONGRESS ON PLANT BREEDING.
 „ 31. } Evening Reception on July 30. Exhibition on July 31.
 Aug. 1. } Banquet on August 2.
 „ 2. } Sessions of the Congress on July 31, August 1 and 2.
 „ 14. Exhibition and Meeting. Lecture by Mr. R. Cock, on Artizans' Gardens in Large Towns.
 „ 28. Exhibition and Meeting. Lecture by Mr. R. H. Curtis, on Meteorology in its Relation to Horticulture.*
 Sept. 11. Exhibition and Meeting. Lecture by Mr. T. S. Dymond, H.M.I., on the Education of Cottage Gardeners.
 „ 19. NATIONAL ROSE SOCIETY'S AUTUMN SHOW.
 „ 25. Exhibition and Meeting. Lecture by Mr. John C. Umney, on Distillation of Perfumes from Flowers.
 Oct. 9. Exhibition and Meeting. Lecture by the Rev. Prof. G. Henslow, V.M.H., on the Origin and Peculiarities of Climbing Plants.*
 „ 16. } SHOW OF BRITISH-GROWN FRUITS. Lecture on Octo-
 „ 17. } ber 16, by Dr. Josiah Oldfield, on the Food Values of Fruits.
 „ 23. Exhibition and Meeting. Lecture by Mr. F. J. Baker, on Horticultural Education.*
 Nov. 6. Exhibition and Meeting. Lecture by Mr. E. H. Wilson, on the Chinese Flora.
 „ 20. Exhibition and Meeting. Lecture by Mr. George Massee, V.M.H., on Some Recent Researches at Wisley.*
 Dec. 4. } SHOW OF COLONIAL-GROWN FRUIT AND VEGE-
 „ 5. } TABLES, AND OF HOME-PRESERVED FRUITS AND
 „ } VEGETABLES. Lecture on December 4 by Mr. Archd. Brooks (of Dominica), on the West Indian Lime.
 „ 11. Exhibition and Meeting. Lecture on Japanese Fruits.
 „ 13. }
 „ 14. } NATIONAL POTATO SOCIETY'S SHOW.
 1907
 Jan. 8 and 22. Exhibitions and Meetings.

* Lecture illustrated by Lantern Slides.

Except on May 29-31 and July 10-11, all the above Shows will be held in the Royal Horticultural Hall, Vincent Square, Westminster, S.W., and Fellows will be admitted free at 1 p.m.; the public at 2 p.m. on payment of 2s. 6d.

A reminder of every Show will be sent in the week preceding to any Fellow who will send to the R.H.S. Offices, Vincent Square, S.W., a sufficient number (30) of halfpenny cards *ready addressed* to himself.

15. LETTING OF HALL.

Fellows are earnestly requested to make known among their friends and among other institutions that the ROYAL HORTICULTURAL HALL is available, twelve days in each fortnight, for Meetings, Shows, Exhibitions, Concerts, Conferences, Lectures, Balls, Banquets, Bazaars, Receptions, and other similar purposes. The Hall has a floor surface of 13,000 square feet. It is cool in summer and warm in winter. For a Concert it will seat 1,500, or for a public meeting 2,000. It is undoubtedly the lightest

Hall in London, and its acoustic properties have been pronounced excellent by some of our greatest authorities. The charges, which are very moderate, include lighting, warming in winter or cooling of the air in summer, seating, and use of trestle-tableting and of platform. The first floor, consisting of four fine rooms, may also be hired for similar purposes, either together with or separately from the Great Hall. This accommodation can also be divided up if desired. Ample cloak rooms for ladies and for gentlemen are available. In fact, the Hall is not only the most suitable Hall in London for special shows of a high-class character, but it is also second only to the Queen's Hall and the Royal Albert Hall for the purposes of Concerts and Meetings. Reduction is made to Charities, and also to Societies kindred or allied to horticulture. The regulations &c. for hiring the Hall are printed in the "Book of Arrangements," and full particulars may be obtained on application to the Secretary, R.H.S., Vincent Square, Westminster, S.W., with whom dates may be booked.

16. HALL ACCOMMODATION.

The area of the GREAT HALL with its Annexes is 13,000 square feet. The London County Council have granted a Music and Dancing Licence, so that money may be taken at the door. Turnstiles are provided when required. A Dramatic Licence can also be obtained on application. The Building is specially adapted for the holding of Shows and Exhibitions, Concerts and Entertainments, Bazaars, Conversaziones, Dances and Banquets, and can be fitted as follows :

For CONCERTS and ENTERTAINMENTS, a platform and seating for 1,200 to 1,500 as required. The stepped platform superstructure is similar to that formerly at St. James's Hall.

For SHOWS and EXHIBITIONS, tabling and stepped staging are provided, for the lighting of which, when required, extra electric cables have been laid on. The walls are also fitted with rods for the display of pictures, photos, and other illustrations.

Gas mains are laid on all over the Great Hall and the eastern Annexe and Lecture Room for cookery purposes and exhibitions requiring heat.

For RECEPTIONS, BALLS, &c., a Parquet Dancing Floor can be arranged. The Annexes can be used for crush rooms or for serving of refreshments, and the Lecture Room and Committee Rooms on first floor as supper or retiring rooms.

A Gallery for an Orchestra or Band is provided at the east end of the Hall.

Large Cloak Rooms occupy the front of the Basement.

The LECTURE ROOM is provided with an electric lantern, and with gas, water, and electric cables for purposes of demonstration. Seating provided for 175 persons.

The COUNCIL and COMMITTEE ROOMS are specially adapted and furnished for Company Meetings, Committees, Arbitrations, &c., and will seat from 50 to 120 persons.

The whole of the FIRST FLOOR may be hired with a separate entrance for At Homes, Weddings, and other Receptions, Conferences, and such

like gatherings. It may also be taken at the same time as the Great Hall, with which it communicates by a special staircase.

17. HALL ENGAGEMENTS FOR 1906.

The Great Hall has already been let for the current year (1906) as follows :

- | | | |
|-------|---------|--|
| Jan. | 6. | Social reunion of the "Clarion" Vans. |
| " | 13. | Dance in aid of the Teachers' Orphanage. |
| " | 15. | Festival Soirée of the Labour Representation Committee. |
| Feb. | 21. | Concert in aid of the Colonial Nursing Association. |
| " | 27. | Concert of the St. Margaret's Musical Society. |
| Mar. | 21. | South African Reception. |
| " | 30. | Show of French Bull Dogs, Griffons, &c. |
| April | 5. | Ladies' Kennel Club Members Show. |
| " | 23-27. | Chemical Exhibition. |
| May | 4. | Church of England Zenana Missionary Meeting. |
| " | 5. | Temperance Fête, Westminster Deanery. |
| " | 9. | Liberal Social Council, Reception. |
| " | 16. | Concert in aid of the Metropolitan Association for Befriending Young Servants. |
| " | 17. | National Anti-Vivisection Society—Annual Meeting. |
| " | 18. | Reception in aid of the Royal Waterloo Hospital. |
| " | 21. | } International Philatelic Exhibition. |
| to | | |
| June | 2.) | |
| " | 14-15. | Bazaar in aid of the Royal Waterloo Hospital. |
| " | 19. | Concert of the St. Margaret's Musical Society. |
| " | 21, 23. | Madame Österberg's Displays of Physical Culture. |
| " | 27.) | } Jubilee of the Reformatory and Ragged School Union. |
| to | | |
| July | 3.) | |
| " | 5. | National Sweet Pea Society. |
| " | 9-14. | Intermediate Examination of the London University. |
| " | 24. | National Carnation and Picotee Society. |
| Sept. | 19. | National Rose Society Autumn Show. |
| " | 20-22. | "Evening News" Chrysanthemum Show. |
| Oct. | 1-5. | London Medical Exhibition. |
| " | 19, 20. | Exhibition of Cage Birds. |
| Nov. | 24.) | } Food and Cookery Exhibition. |
| to | | |
| Dec. | 1.) | |
| " | 7. | Show of Toy Dogs. |
| " | 13, 14. | National Potato Show. |

Fellows will greatly help the Society by making it known that the Hall, as well as the Rooms on the first floor, are available for hiring, as the Council hope to defray part of the terribly heavy rates and taxes and other necessary outgoings by letting the premises on days when they are not required by the Society.

Note.—Dates in 1907 are being rapidly booked.

18. THE TEMPLE SHOW.

The nineteenth great annual Flower Show in the Inner Temple Gardens, Thames Embankment, will be held, by kind permission of the Treasurer and Benchers of the Inner Temple, on Tuesday, Wednesday, and Thursday, May 29, 30, and 31.

As on previous occasions, a large number of Silver Cups and Medals will be awarded according to merit. The VEITCHIAN CUP, value 55 guineas, will also be awarded on this occasion.

Fellows of the Society are admitted free on showing their tickets. N.B.—Each Personal Pass is strictly non-transferable, and will admit only the Fellow to whom it belongs, but no one else. Fellows' *Transferable Tickets* are available for themselves or a friend. The general public are admitted by purchased tickets:—On Tuesday, May 29, from 12.30 to 7 P.M., 7s. 6d. On Wednesday, from 9 A.M. to 7 P.M., 2s. 6d. On Thursday, from 9 A.M. to 6 P.M., 1s.

To avoid the inconvenience of crowding, tickets may be obtained beforehand at the Society's Offices, Vincent Square, Westminster, S.W. The Offices at Westminster will be closed on the days of the Show, and consequently no letters should be addressed there on the previous day.

On the days of the Show, tickets will only be on sale near the entrance to the Gardens (Thames Embankment Gate).

Members of Affiliated Societies, and *bona fide* Gardeners, may obtain 2s. 6d. tickets for 1s., which will admit them to the exhibition on Wednesday. Members of Affiliated Societies *must* apply *only through the Secretary of their own Society* if they wish to take advantage of this privilege. These tickets *can only be obtained* on or before May 26 *from the Society's Office*, Vincent Square, Westminster, S.W., and a large stamped and directed envelope must be sent with Postal Order in every case.

19. SHOW OF FLORAL DECORATIONS.

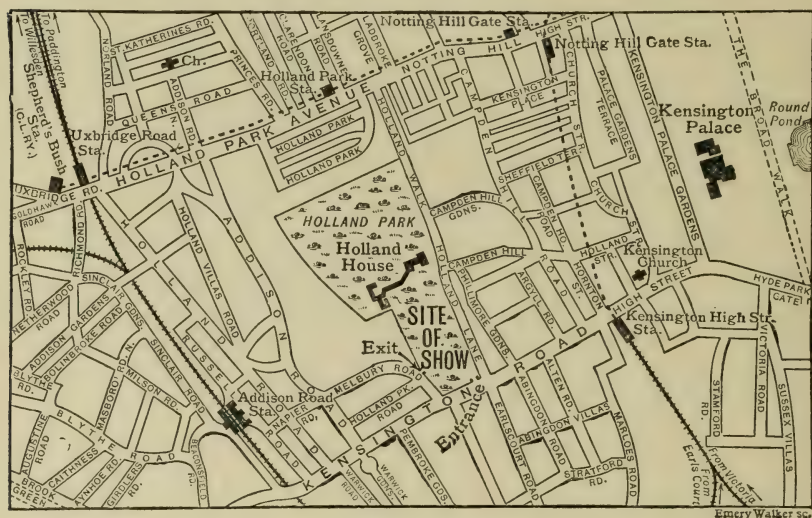
The Council have decided to hold a special Show on Wednesday, June 20, 1906, of "Floral Decorations," including dinner-table decorations, vases, bouquets, baskets, &c., and have arranged special classes for professional decorators and for amateurs, the term amateur including gentlemen's gardeners and other servants, as well as the ladies and gentlemen themselves (*see Arrangements, 1906*). In consequence of the space being limited, only a certain number of entries can be accepted, and these *must* be made on or before June 10, but priority of entry before that date will be advantageous to the exhibitor. The Show will be open to Fellows at 1 P.M., and to the public on payment of 2s. 6d. from 2 to 6, and 1s. from 6 to 8 P.M.

20. HOLLAND HOUSE SHOW, 1906.

By the kind permission of the Dowager Countess of Ilchester the Summer Show will be held at Holland House on July 10 and 11, full particulars of which are published in the "Book of Arrangements," 1906. The rules for the Temple Show apply as far as possible to Holland House, but there is sufficient space to allow of a Sundries Tent.

An arrangement has also been made with the Royal Meteorological Society for an Exhibition of Meteorological Instruments, comprising rain-gauges, sunshine-recorders, barometers, thermometers, photographs illustrating meteorological phenomena, diagrams illustrating the influence of the weather upon garden and other crops, &c., and also a typical open-air Climatological Station in working order. Mr. William Marriott, the Assistant Secretary of the Royal Meteorological Society, will give a short address each day at 3.30 P.M. on "Meteorology in Relation to Gardening," and will explain the nature and working of the instruments shown.

The site of the Show is very centrally situated and is easily accessible from all parts of London. Holland House lies due west of Hyde Park and Kensington Gardens, and is within five minutes' walk of FOUR railway stations. Visitors from the City and West End will find the Holland Park (Tube) Station, on the Central London Railway, very convenient. Those travelling from Kew, Ealing and the Western Suburbs will find



SITE OF THE SHOW.

the electrified District Railway a good route ; or they can take a tram to Hammersmith Broadway, and thence an omnibus to the Entrance *Gates*.

Note.—KENSINGTON HIGH STREET is the nearest Station on the Metropolitan and District Railways from Liverpool Street, King's Cross, St. Pancras, Euston, Paddington, Cannon Street, Charing Cross, and Victoria.

ADDISON ROAD is the nearest from Waterloo, Clapham Junction, Willesden, and Richmond.

EARL'S COURT is the nearest from Wimbledon, Putney, Fulham, Acton, Ealing, and Windsor. It is convenient to change at Earl's Court for Kensington High Street.

All Hammersmith and Turnham Green Omnibuses pass the Gates, from Liverpool Street, Bank, King's Cross, St. Pancras, Euston, Charing Cross, and Hammersmith.

The ONLY ENTRANCE to the Show will be by the Great Gate in

Kensington High Street, and the ONLY EXIT by the Gate leading into Melbury Road, where carriages may be ordered to wait.

To avoid crowding at the Gate, the public are earnestly requested to obtain their tickets on or before Monday, July 9, from the Society's Offices, Vincent Square, Westminster, S.W.

21. INTERNATIONAL CONFERENCE ON PLANT BREEDING.

Very successful Conferences on Plant Breeding, whether by hybridisation or by cross-fertilisation, have been held already, one in London under the Society's auspices in 1899, and a second in New York under the auspices of the Horticultural Society of New York, U.S.A., in 1902. A third has now been arranged to take place in London, commencing on July 30, and concluding on August 3, 1906.

The programme, as far as at present arranged, is as follows :

Monday, July 30.

9 P.M. to 10.30. *Conversazione* in the Society's Great Hall.

9.30. Address of Welcome by the President of the Society, Sir Trevor Lawrence, Bart., K.C.V.O., V.M.H., &c.

10 to 10.30. Lantern slides of various hybrids. The loan of any interesting slides would be greatly esteemed.

Refreshments will be served during the evening.

The price of tickets for the *Conversazione* will be, to Fellows, 2s. 6d.

Tuesday, July 31.

10.30 A.M. to 1. First Session of the Conference. Opening Address by W. Bateson, Esq., F.R.S., President of the Conference.

1.15. Light luncheon.

2.30 to 5. Second Session of the Conference.

6.30. Dinner at the Hotel Windsor, at the kind invitation of the Horticultural Club.

Wednesday, August 1.

10.30 A.M. to 12.45. Third Session of the Conference.

1.30. Luncheon at Burford, at the kind invitation of the President of the Society, Sir Trevor Lawrence, Bart., K.C.V.O., V.M.H., &c.

Thursday, August 2.

10.30 A.M. to 1. Fourth Session of the Conference.

1.15. Light luncheon.

2.30 to 5. Fifth Session of the Conference.

7. Banquet in the Great Hall.

Friday, August 3.

10.30 to 11.30. Visit the Natural History Museum.

12. Visit the gardens of Gunnersbury House and Park.

1.30. Luncheon at Gunnersbury, at the kind invitation of Mr. Leopold de Rothschild.

3 to 5. Visit Kew Gardens.

The presence of ladies, both at the *conversazione* and at the banquet, will be most gladly welcomed. The charge to Fellows for tickets for the *conversazione* will be 2s. 6d., and for the banquet probably £1. 1s. Fellows will be allowed to introduce friends to both these gatherings.

If the acceptances of the foreign invited guests should be very numerous, English guests will naturally understand that it may not be possible to invite them all to all the social functions connected with the Conference. English guests must be prepared, under such circumstances, to stand aside in favour of the Foreign Savants who will have come over at the invitation of the Society on purpose to attend this Conference.

It will, of course, also be understood by the Fellows, that it will be impossible to admit anyone to the Sessions of the Conference *without a special ticket* for that particular purpose, otherwise the room might easily be filled by the Fellows to the exclusion of the Society's invited guests.

Fuller particulars will be issued later.

22. BRITISH FRUIT SHOW.

The Great Autumn Show of British-grown Hardy Fruits, which the Society has held for so many years past, has become as much a thing to be regularly looked for by fruit-growers as the Show at the Temple in May is looked for by growers of flowers.

The thirteenth of these Shows will be held on October 16 and 17, 1906, in the Society's Hall, and, being in the very heart of London, should prove very attractive to the public.

23. COLONIAL-GROWN FRUIT SHOWS.

The President and Council have decided to hold Shows of Colonial-grown Fruit at their New Hall, on March 22 and 23, June 6 and 7, and December 4 and 5, 1906.

The object of fixing these dates is, if possible, to suit the season which is most likely to find the produce of Canada, British Columbia, and the West Indies; of India and the Cape; and of Australia, Tasmania, and New Zealand, in the greatest perfection in London. Opportunity is afforded for each Colony to make collective exhibits in addition to the exhibits of individual firms. The Agents General and Crown Agents are most kindly rendering every assistance, and we trust that both growers and shippers will do their best to send in exhibits worthy of our Colonies, and to show what can be produced for the Home markets. No entrance fee or charge for space is made, and tabling is also provided free of expense. If desired any produce may be consigned direct to the Society, and it will be stored in the cellars at Vincent Square and staged by the Society's officials, but the Society cannot undertake to repack and return any exhibits. Medals and other Prizes are offered by the Council in each class.

Particulars of the shows can be obtained from the Secretary, R.H.S., Vincent Square, Westminster, S.W., by enclosing one penny stamp in order to cover the cost of postage.

24. SHOWS OF KINDRED SOCIETIES TO WHICH FELLOWS' TICKETS ADMIT WITHOUT PAYMENT.

The following dates are liable to alteration by each individual Society, but are correct so far as is known at the time of going to press :—

April 17.—Auricula and Primula Society.

July 5.—Sweet Pea Society.

July 24.—Carnation and Picotee Society.

September 19.—National Rose Society.

December 13 and 14.—The Potato Society.

Copies of the Schedules for these Shows may be obtained from the Honorary Secretary of each Society.

25. LECTURES.

The new Lecture Room is fitted with an electric lantern of the most modern construction; electric current, gas, and water are laid on, and every provision has been made for the due illustration and delivery of Lectures.

Any Fellows willing to Lecture, or to communicate Papers on interesting subjects, are requested to communicate with the Secretary.

26. EXAMINATIONS.

1. The Society holds an examination in January for gardeners employed in Public Parks and Gardens belonging to County Councils, City Corporations, and similar bodies. This examination is conducted in the Royal Horticultural Society's Hall, Vincent Square, Westminster, S.W. No entry for 1907 can be accepted after December 31, 1906.

2. The Society's Annual Examination in the Principles and Practice of Horticulture is held in March. Candidates should send in their names not later than March 1. Full particulars may be obtained by sending a stamped and directed envelope to the Society's offices. Copies of the Questions set from 1893 to 1905 (price 1s. 9d., or 10s. a dozen) may also be obtained from the office. The Society is willing to hold an examination wherever a magistrate, clergyman, schoolmaster, or other responsible person accustomed to examinations will consent to supervise one on the Society's behalf.

In connection with this examination a scholarship of £25 a year for two years is offered by the Society to be awarded after the 1907 examination to the student who shall pass highest, if he is willing to accept the conditions attaching thereto. The main outline of these conditions is that the holder must be of the male sex, and between the ages of 18 and 22 years, and that he should study gardening for one year at least at the Royal Horticultural Society's Gardens at Wisley, conforming to the general rules laid down there for Students. In the second year of the Scholarship he may, if he like, continue his studies at some other place at home or abroad which is approved by the Council of the Royal

Horticultural Society. In case of two or more eligible students being adjudged equal, the Council reserve to themselves the right to decide which of them shall be presented to the Scholarship.

3. The Society holds an Examination in Cottage and Allotment Gardening in April. This examination is confined to Elementary and Technical School Teachers. It is undertaken in view of the increasing demand in country districts that the Schoolmaster shall be competent to teach the elements of Cottage Gardening, and the absence of any test whatever of such competence. The general conduct of this examination is on similar lines to that of the more general examination.

27. STUDENTS.

The Society admits a limited number of young men to study Gardening in their Gardens at Wisley. These Working Students have also the advantage of attending most of the Society's meetings and Shows at the Royal Horticultural Hall and elsewhere.

28. INFORMATION.

Fellows may obtain information and advice free of charge from the Society as to the names of flowers and fruit, on points of practice, insect and fungoid attacks, and other questions by applying to the Secretary, R.H.S., Vincent Square, Westminster, S.W. Where at all practicable, it is particularly requested that letters and specimens may be timed to reach Vincent Square by the first post on the mornings of the Fortnightly Meetings (see p. ix), so as to be laid before the Scientific or other Committees at once.

29. INSPECTION OF FELLOWS' GARDENS.

The Inspection of Gardens belonging to Fellows is conducted by a thoroughly competent Inspector from the Society, who reports and advises at the following cost, viz. a fee of £3. 3s. for one day (or £5. 5s. for two consecutive days), together with all out-of-pocket expenses. No inspection may occupy more than two days, save by special arrangement. Fellows wishing for the services of an Inspector are requested to give at least a week's notice and choice of two or three days, and to indicate the most convenient railway station and its distance from their garden.

30. AFFILIATED SOCIETIES.

One of the most successful of the many new branches of work undertaken since the reconstruction of the Society in 1887 is the unification of all local Horticultural, Floral, and Gardening Societies by a scheme of affiliation to the R.H.S. Since this was initiated, more than 200 Societies have joined our ranks, and the number is steadily increasing.

Secretaries of Affiliated Societies can now obtain application a specimen copy of a new Card which the Council have prepared for the use of Affiliated Societies wishing to have a Card for Certificates, Commenda-

tions, &c. It can be used for Fruit or Flowers or Vegetables. Price 3s. 6d. for 10 copies, 5s. 6d. for 20, 11s. 6d. for 50, 20s. for 100.

The Council have also struck a special Medal for the use of Affiliated Societies. It is issued at cost price in Bronze, Silver, and Silver-gilt—viz. Bronze, 5s. 6d., with case complete; Silver, 12s. 6d., with case complete; Silver-gilt, 16s. 6d., with case complete. Award Cards having the Medal embossed in relief can be sent with the medal if ordered—price 6d. each.

31. RULES FOR JUDGING.

The "Rules for Judging, with Suggestions to Schedule Makers and Exhibitors," was revised in October last and considerably modified from the experience gained during the last five years. The Secretaries of Local Societies are therefore strongly advised to obtain a fresh copy. It will be sent post free on receipt of a postal order for 1s. 6d. addressed to the Secretary, Horticultural Hall, Vincent Square, Westminster, S.W.

32. VARIETIES OF FRUITS.

The Society has just published a new and greatly revised edition of "Varieties of Fruits." It contains a list of the best Apples for cooking and for dessert; the best Pears, Plums, Damsons, Cherries, Raspberries, Currants, Gooseberries, and Strawberries, showing in each case the best form in which to grow them and the time they ripen. Then follow some few pages of most useful notes on How to Plant, How to Prune, Root-Pruning, Manuring, and on the use of Artificial Manures. At the end are given the names of some of the quite new varieties of Fruits, which promise well but are not yet sufficiently long proved to be recommended for general planting.

Copies of this most valuable little pamphlet for distribution may be obtained at the Societies Office, Vincent Square, Westminster. Price, post free, single copy 2s., or 25s.; 50s.; 100s., 4s.

33. OTHER PUBLICATIONS.

BULBOUS IRISES.—By Prof. Sir Michael Foster, M.P., F.R.S. Profusely illustrated. An exhaustive treatise on these beautiful plants. Almost every species is fully described and illustrated, and particulars as to distinguishing characteristics, growth, time of flowering, native country, &c., are given. 58 illustrations, 86 pages. Price 1s. 6d. post free.

PLANTS CERTIFICATED.—A Complete List of all the Plants, Flowers, Orchids, Ferns, Fruits, and Vegetables Certificated by the Society from the year 1859 to December 1899. 210 pages, 1900. Price 1s. 6d. post free.

HARDY FRUIT CULTURE.—Two Prize Essays. 107 pages, 1896. Price 1s. 6d. post free.

EXAMINATIONS IN HORTICULTURE.—Papers set from 1893 to 1905. Price 1s. 9d. post free; 10s. per dozen sets.

All the above may be obtained from the Offices of the Royal Horticultural Society, Vincent Square, Westminster, S.W.

34. PICTURE POST-CARDS.

The Council have caused picture post-cards of the Society's Hall to be prepared, and very good they are. They are printed in various colours, and show the front elevation of the buildings, the interior of the Great Hall looking east as let for a show or a bazaar, and the interior looking west, with platform and chairs as arranged for a concert or public meeting. These cards may be purchased by Fellows at the Society's Offices, Vincent Square, Westminster, S.W., at cost price, viz. 6*d.* a dozen (unstamped), or a couple of dozen will be sent post free on receipt of 1*s.* postal order. The Secretary will consider it a great kindness if Fellows would purchase and use some of these cards so as to make more generally and widely known the possibilities of our new buildings for letting for various purposes. •

35. PORTRAIT OF THE PRESIDENT AND THE LAWRENCE MEDAL.

The following circular letter is being sent to all the Fellows, and will, we hope, be universally responded to, as 2,000 subscriptions of 5*s.* and 500 of a guinea would be far more gratifying than a lesser number of larger amount.

DEAR SIR OR MADAM,

At the last Annual Meeting of our Society, held on February 13, the President, Sir Trevor Lawrence, Bart., K.C.V.O., V.M.H., completed the twenty-first year of his Presidency.

When he first took up the office the Society was at a very low ebb indeed, having barely 1,000 Fellows, no buildings of its own, and an annually increasing deficit. Owing in no small measure to Sir Trevor's wise guidance, it now has almost 10,000 Fellows, a magnificent Hall and offices in Vincent Square, Westminster, and at each year's end a sufficient balance to make one feel confident for the immediate future.

To celebrate Sir Trevor's twenty-one years of office the Council have resolved to invite all the Fellows to subscribe towards having his portrait painted by Professor Herkomer to place in the Society's new buildings, and also to establish in perpetuity a large gold medal, to be called "The Lawrence Medal," to be awarded to exhibits of a specially meritorious character at the Society's meetings, the want of such a medal having been felt for a very long time.

To carry out these projects in a fitting manner, about a thousand guineas will be required, and we hope that you will allow us to put down your name for a subscription.

Signed, on behalf of the Council,

J. GURNEY FOWLER,
Treasurer.

Cheques should be drawn in favour of J. Gurney Fowler, and crossed "London and County Bank."

The following promises were received before this letter was generally circulated :—

	£	s.	d.		£	s.	d.
Baron Schröder, V.M.H.	100	0	0	Sir Joseph Hooker, V.M.H.	3	3	0
J. G. Fowler	10	10	0	James O'Brien, V.M.H.	1	1	0
W. Marshall, V.M.H.	1	1	0	John T. Bennett-Poe, V.M.H.	1	1	0
Harry J. Veitch, V.M.H.	5	0	0	Arthur W. Sutton, V.M.H.	5	5	0
A. H. Pearson	1	1	0	Geo. S. Saunders	1	1	0
Major Holford, C.I.E., C.V.O.	10	10	0	J. G. Baker, V.M.H., F.R.S.	1	1	0
W. A. Bilney	2	2	0	E. T. Cook	0	10	6
A. L. Wigan	2	2	0	Henry C. Nevison	0	5	0
Henry B. May	1	1	0	Sir Charles Strickland, Bart.	5	0	0
James Hudson, V.M.H.	0	10	6	Sir Albert Rollit	5	5	0
George Bunyard, V.M.H.	1	1	0	Edward Baston	0	5	0
Lord Balfour of Burleigh	3	3	0	The Earl of Tankerville	2	2	0
Rev. W. Wilks	1	1	0	Alexander Dean, V.M.H.	0	10	6
N. N. Sherwood, V.M.H.	5	5	0	Samuel Heilbut	5	0	0
Sir John Llewelyn, Bart.	10	10	0	E. Ascheison	5	5	0
Martin R. Smith, V.M.H.	25	0	0	J. Bradshaw	5	0	0
Sir Frederick Wigan, Bart.	10	10	0	N. L. Cohen	1	1	0
Jeremiah Colman	10	10	0	The Duke of Portland	5	5	0
Leopold de Rothschild	21	0	0	Norman Rokeby	0	5	0
Lord Rothschild	26	5	0	Messrs. Sutton & Sons	10	10	0
Edward Mawley, V.M.H.	1	1	0	Lord Llangattock	1	0	0
C. J. Lucas	3	3	0	Lady Tate	2	2	0
The Earl of Ducie	5	5	0	H. R. Darlington	0	10	6
Miss Willmott, V.M.H.	1	1	0	Rt. Hon. J. Chamberlain, M.P.	2	2	0
Norman Cookson	5	5	0	G. F. Moore	2	2	0
de Barri Crawshay	1	1	0	Mrs. Denison	1	1	0
Hon. John Boscawen	2	2	0	W. J. Westley	0	5	0
George Nicholson, V.M.H.	0	10	6	John Rutherford, M.P.	2	2	0
Dr. Masters, F.R.S.	1	1	0				

36. ADVERTISEMENTS.

Fellows are reminded that the more they can place their orders with those who advertise in the Society's Publications the more likely others are to advertise also, and in this way the Society may be indirectly benefited. An Index to the Advertisements will be found on pages 34 and 35.

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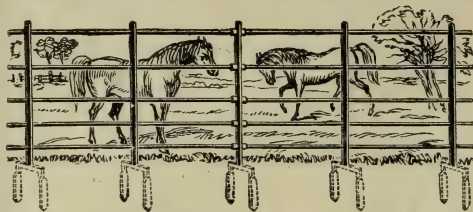
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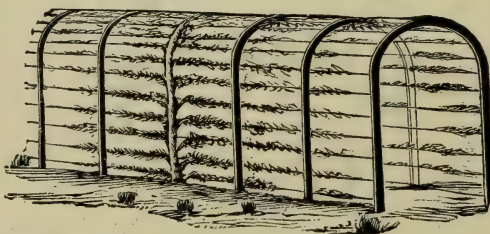
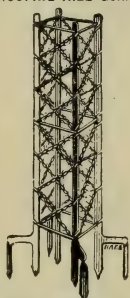


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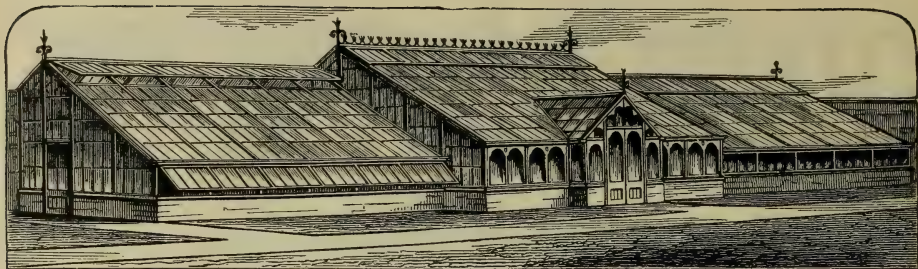
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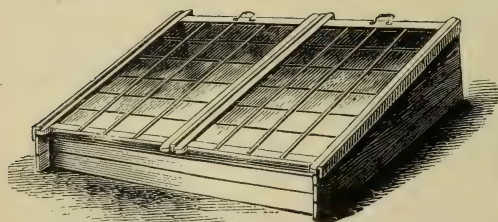
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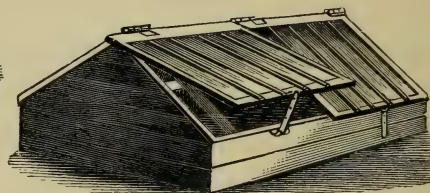


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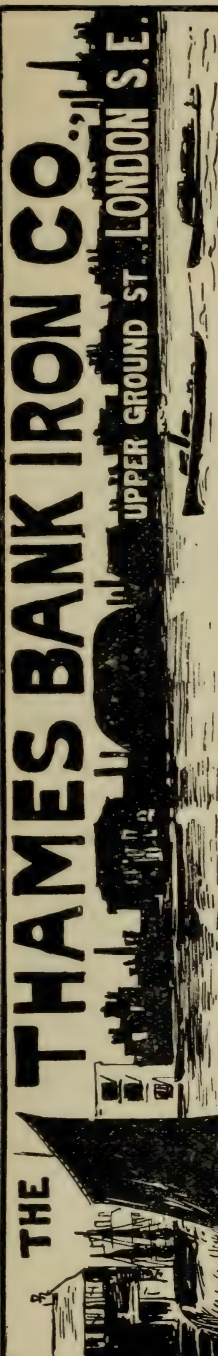
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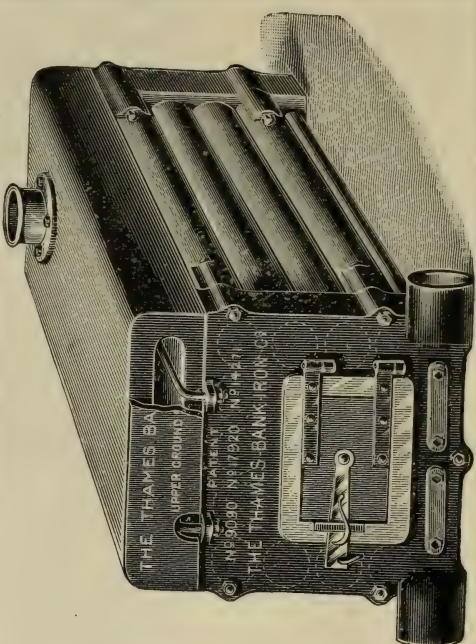
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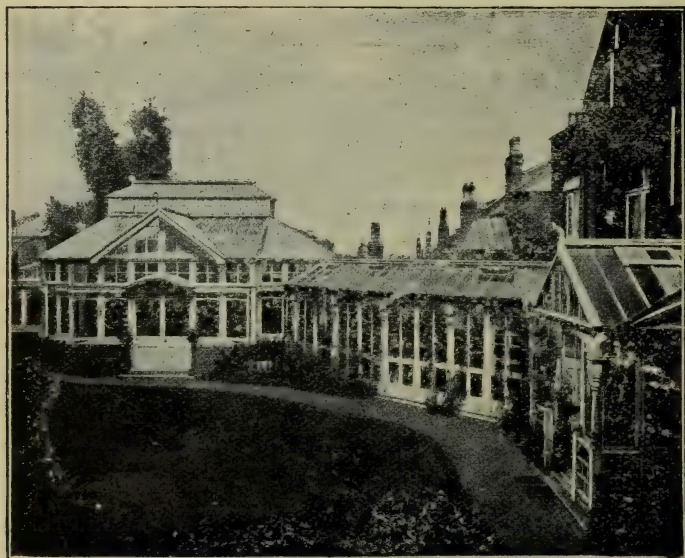
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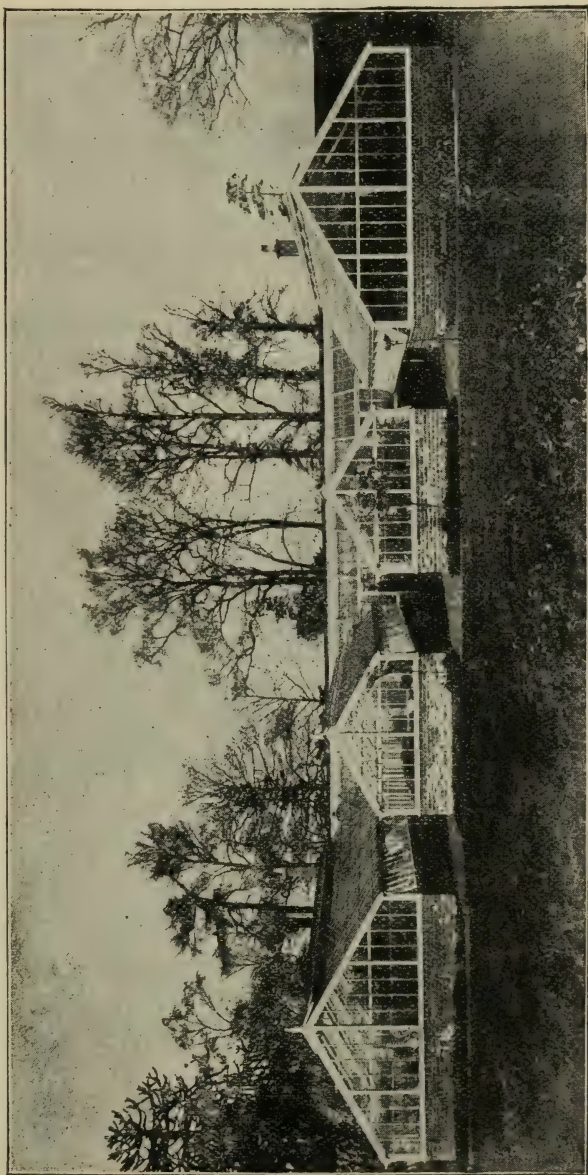
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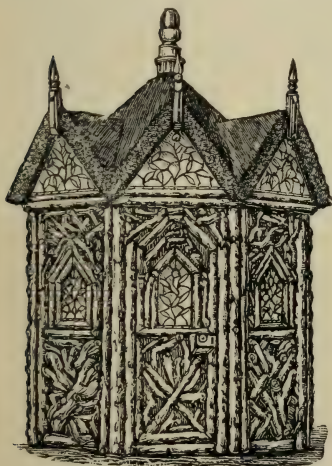
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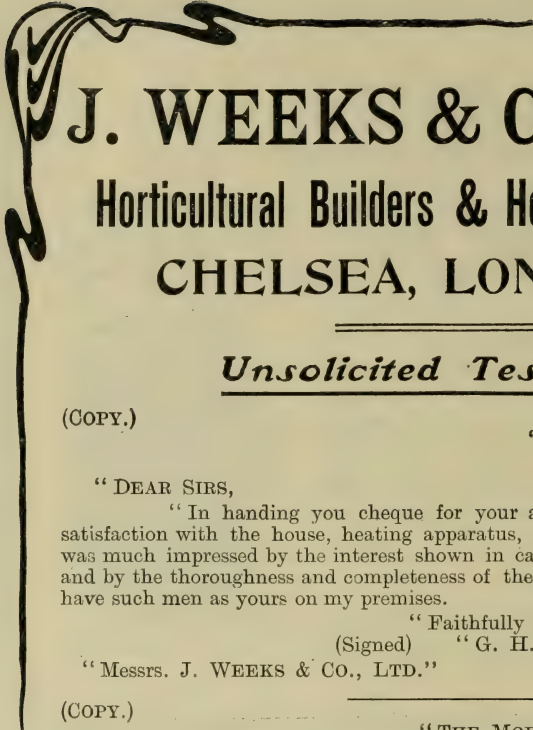
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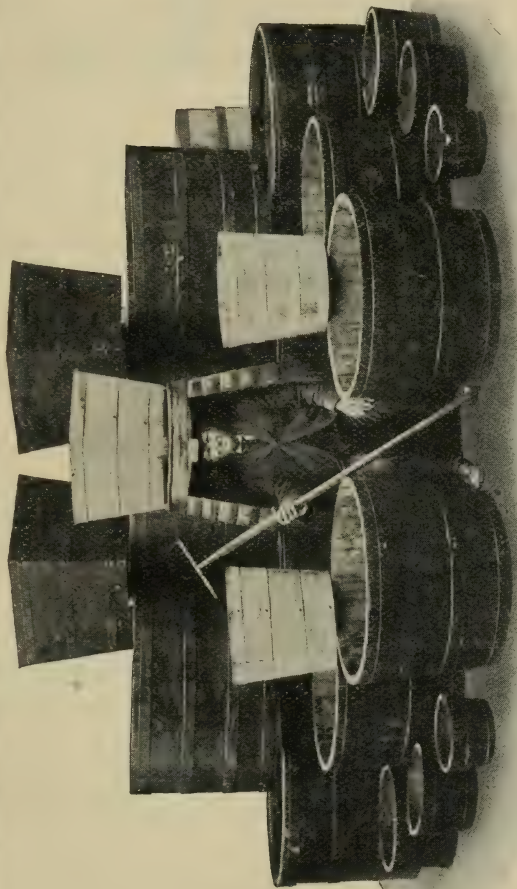
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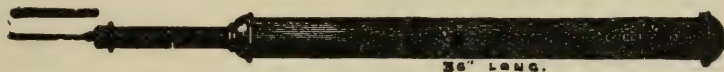
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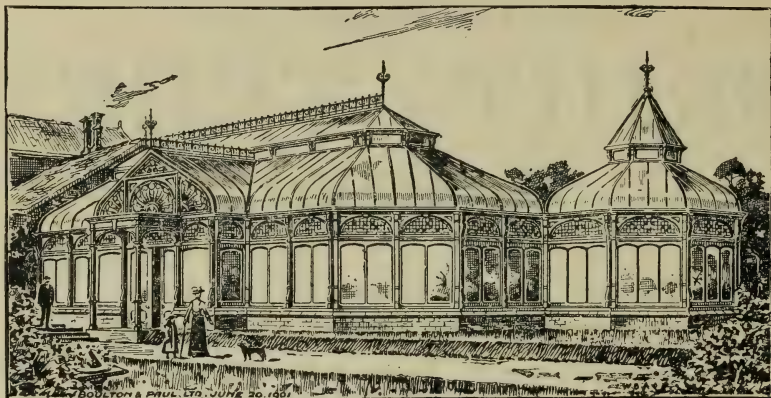
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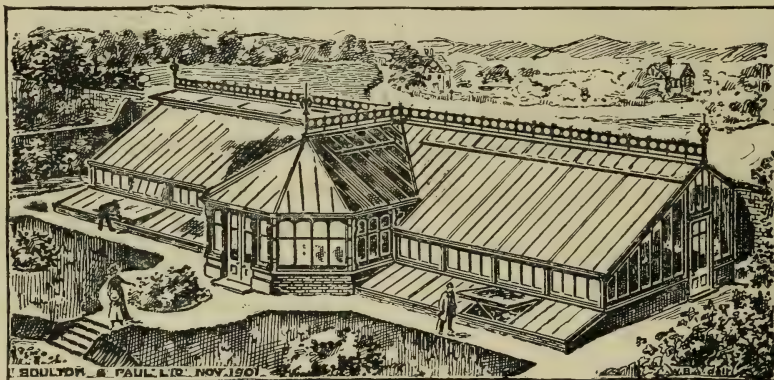
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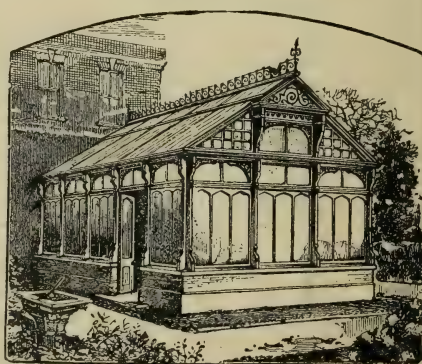
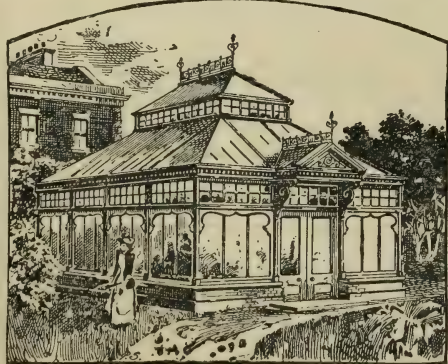
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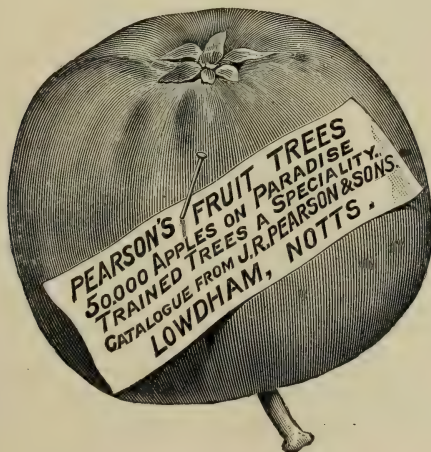
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I regret that, owing to the very small quantity of seed harvested last season, I cannot send "Helen Lewis" out till OCTOBER 1906, but I must strongly impress upon every one that I have purchased from Mr. Watson the ENTIRE and only TRUE STOCK of this beautiful variety, and that any Sweet Pea offered for sale during the season of 1906, under the name of "Helen Lewis," cannot possibly be the raiser's GENUINE stock.

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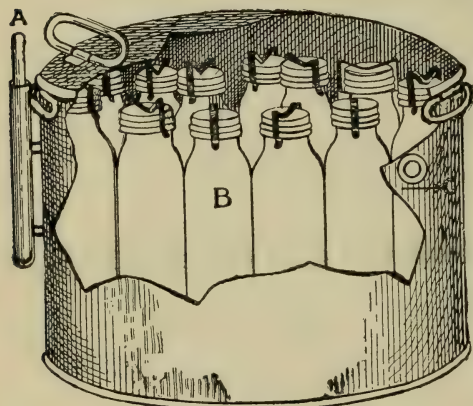
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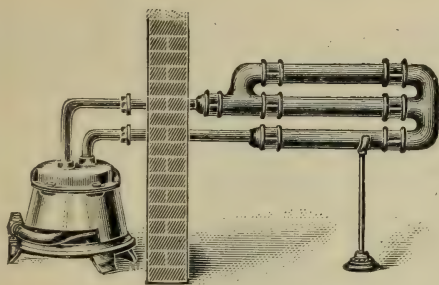
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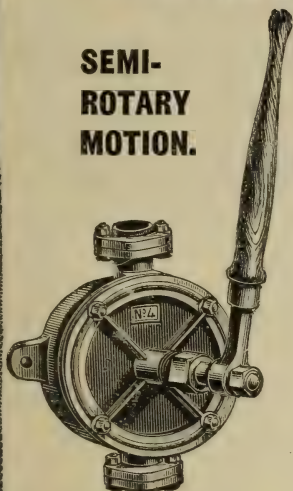
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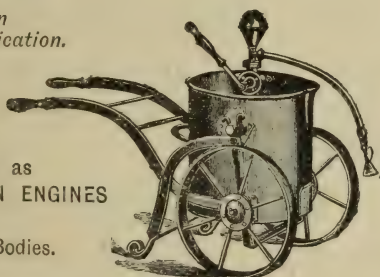
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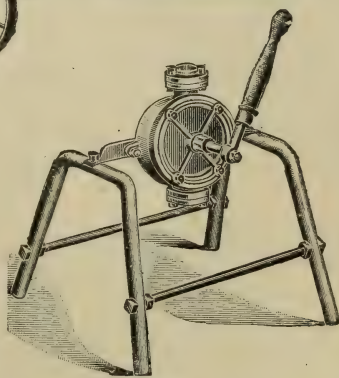
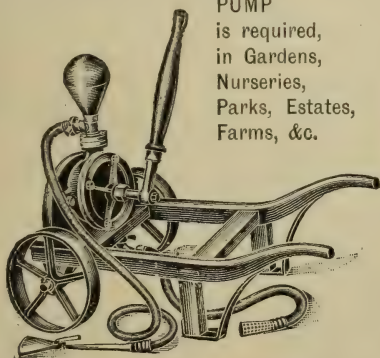


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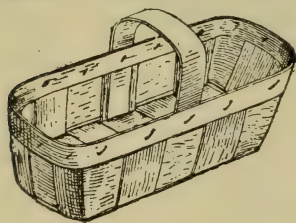
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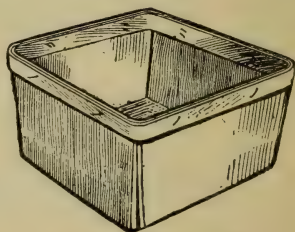
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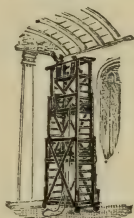
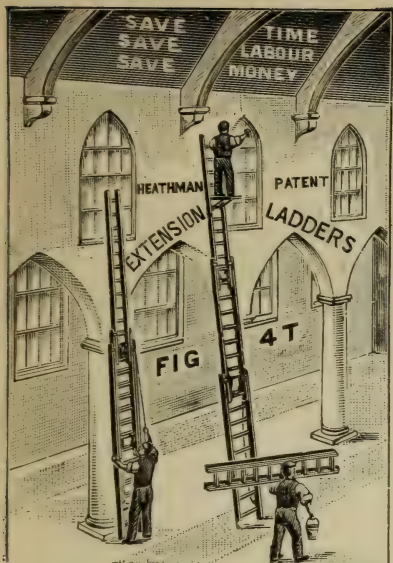
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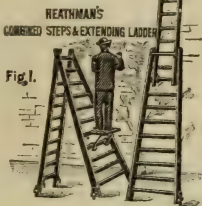
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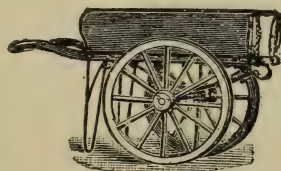
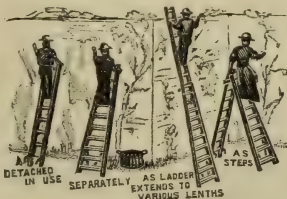
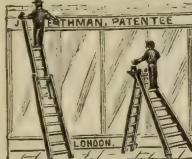
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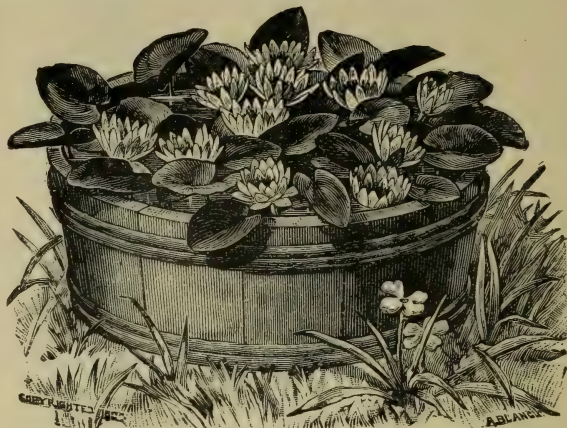
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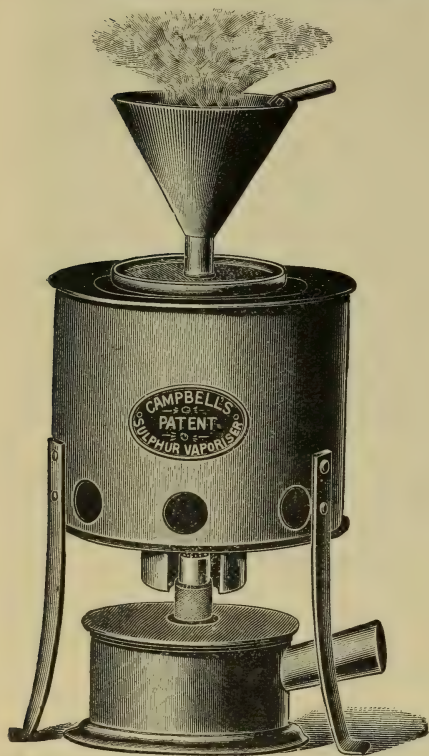
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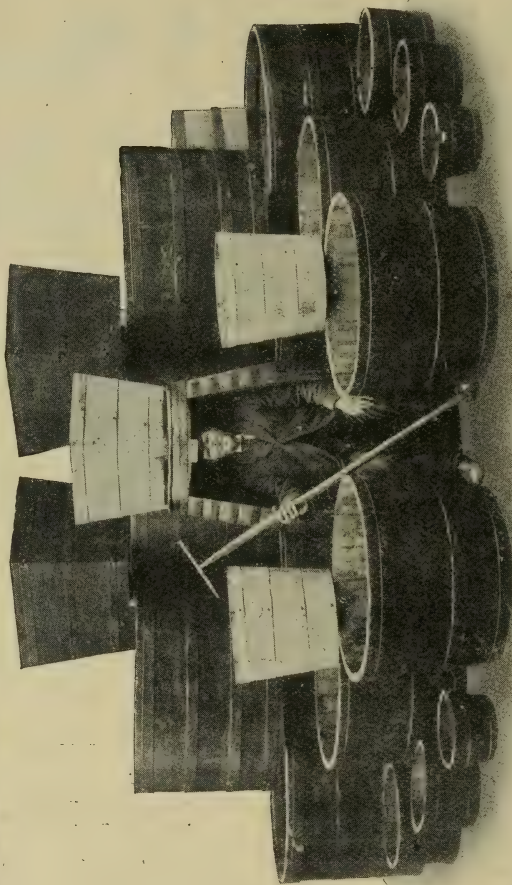
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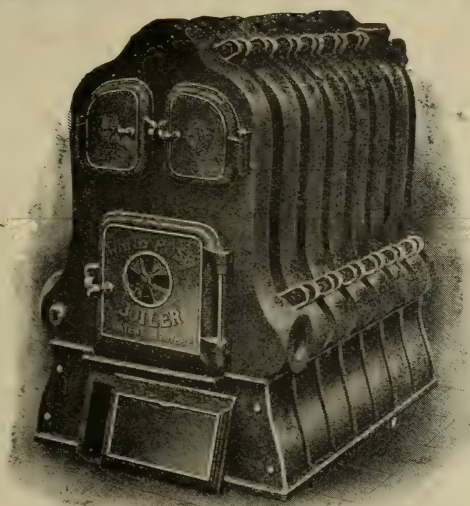
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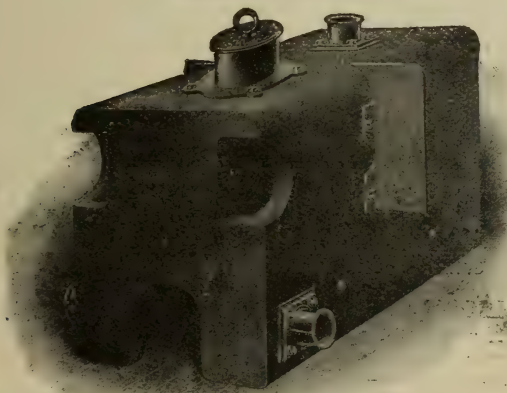
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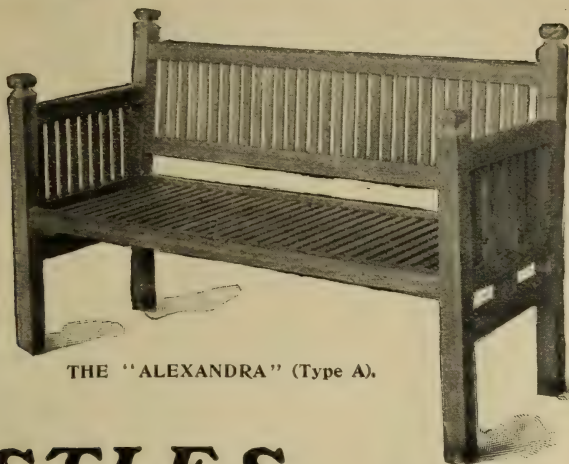
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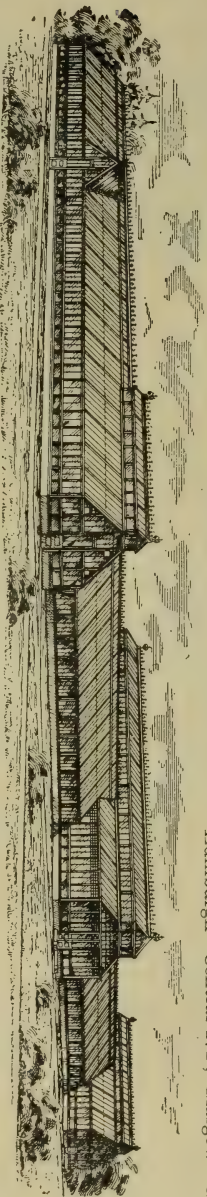
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